

500	505	510
Leu Glu Leu Asp Asn Leu Ile Glu Val Ala Lys Ala Thr Leu Val Ser		
515	520	525
Ala Glu Ala Arg Lys Glu Ser Arg Gly Ala His Ala Ser Asp Asp His		
530	535	540
Pro Glu Arg Asp Asp Glu Asn Trp Met Lys His Thr Leu Tyr His Ser		
545	550	555
Asp Ile Asn Thr Leu Ser Tyr Lys Pro Val His Thr Lys Pro Leu Ser		
565	570	575
Val Glu Tyr Ile Lys Pro Ala Lys Arg Val Tyr		
580	585	

<210> 71  
 <211> 1764  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (67)  
 <223> N is any nucleotide

<220>  
 <221> misc\_feature  
 <222> (408)  
 <223> N is any nucleotide

<400> 71  
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 cgcgcanccc tccaattatc caaatccggt ctgaattgtg ccgttttgtc taaagtgttc 120  
 ccgaccggtt cgcataccgt agcggcgcag ggcggtatct ccgcctctct gggtaatgtg 180  
 caggaagacc gttgggactg gcacatgtac gataccgtga aaggttccga ctggttgggc 240  
 gaccaagatg cgattgagtt tatgtgccgc gccgcgcctg aagccgtaat tgagttggaa 300  
 cacatgggta tgccttttga ccgtgtggaa agcggtaaaa tttatcagcg tcctttcggc 360  
 ggccatactg ccgaacacgg taaacgcgcg gtagaacgcg cctgtgcngt tgccgaccgt 420  
 acaggtcatg cgatgctgca tactttgtac caacaaaatg tccgtgccaa tacgcaattc 480  
 tttgtggaat ggacggcaca agatttgatt cgtgatgaaa acggcgatgt cgtcggcgta 540  
 accgccatgg aaatggaaac cggcgaagtt tatattttcc acgctaaagc tgtgatgttt 600  
 gctaccggcg gcggcggcgc tatttatgcg tcttctacca atgcctatat gaataccggc 660  
 gatgggtttg gtatttgtgc gcgtgcaggt atcccgttgg aagacatgga attctggcaa 720  
 ttccaccoga ccggcgtggc aggtgcgggc gtgttgatta ccgaaggcgt acgcggcgag 780  
 ggcggtatct tgttgaatgc cgacggcgaa cgctttatgg aacgctatgc gccgaccgta 840  
 aaagacttgg cttctcgcga cgttggttcc cgcgcgatgg cgatggaaat ctacgaaggt 900  
 cgcggtctgc gtaaaaacaa agaccatgtc ttactgaaaa tcgaccatat cggcgcagaa 960  
 aaaattatgg aaaaactgcc gggcatccgc gagatttcca ttcagttcgc cgttatcgat 1020  
 ccgattaaag acccgattcc cgttgtgccc actaccact atatgatggg cggtattccg 1080  
 accaactacc atggcggaagt tgtcgttcct caaggcgacg aatacgaagt gcctgtaaaa 1140  
 ggtctgtatg cggcaggtga gtgcgcctgt gcttccgtac acggtgcaa ccgcttgggt 1200  
 acgaactccc tgctggactt agtggatttc ggtaaagctg ccggcgacag catgattaaa 1260  
 ttcaccaaag agcaaaagcga ctggaaacct ttgcctgcta atgccggcga actgacccgc 1320  
 caacgtatcg agcgttttga caatcaaact gatggtgaaa acgttgatgc attgcgcgcg 1380

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gaactgcaac gctccgtaca attgcacgcc ggcgtgttcc gtactgatga gattctgagc 1440
aaaggcgttc gagaagtcac ggcgattgcc gagcgtgtga aacgtaccga aatcaaagac 1500
aagagcaaaag tgtggaatac cgcgcgtatc gaggccttgg aattggataa cctaattgaa 1560
gtggcgaaaag cgactttggg gtctgccgaa gcacgtaaag aatcacgcgg tgcgcacgct 1620
tcagacgacc atcctgagcg cgatgatgaa aactggatga aacatacgct gtaccattca 1680
gatgcccaata ccttgtccta caaacgggtg cacaccaagc ctttgagcgt ggaatacatc 1740
aaaccggcca agcgcgttta ttga                                     1764

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<210> 72  
 <211> 587  
 <212> PRT  
 <213> *Neisseria meningitidis*

<220>  
 <221> UNSURE  
 <222> (23)  
 <223> Xaa is any amino acid

<400> 72

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Gly	Ala	Gly	Leu	Arg	Ala	Xaa	Leu	Gln	Leu	Ser	Lys	Ser	Gly	Leu	Asn	20		25		30		
Cys	Ala	Val	Leu	Ser	Lys	Val	Phe	Pro	Thr	Arg	Ser	His	Thr	Val	Ala	35		40		45		
Ala	Gln	Gly	Gly	Ile	Ser	Ala	Ser	Leu	Gly	Asn	Val	Gln	Glu	Asp	Arg	50		55		60		
Trp	Asp	Trp	His	Met	Tyr	Asp	Thr	Val	Lys	Gly	Ser	Asp	Trp	Leu	Gly	65		70		75		80
Asp	Gln	Asp	Ala	Ile	Glu	Phe	Met	Cys	Arg	Ala	Ala	Pro	Glu	Ala	Val	85		90		95		
Ile	Glu	Leu	Glu	His	Met	Gly	Met	Pro	Phe	Asp	Arg	Val	Glu	Ser	Gly	100		105		110		
Lys	Ile	Tyr	Gln	Arg	Pro	Phe	Gly	Gly	His	Thr	Ala	Glu	His	Gly	Lys	115		120		125		
Arg	Ala	Val	Glu	Arg	Ala	Cys	Ala	Val	Ala	Asp	Arg	Thr	Gly	His	Ala	130		135		140		
Met	Leu	His	Thr	Leu	Tyr	Gln	Gln	Asn	Val	Arg	Ala	Asn	Thr	Gln	Phe	145		150		155		160
Phe	Val	Glu	Trp	Thr	Ala	Gln	Asp	Leu	Ile	Arg	Asp	Glu	Asn	Gly	Asp	165		170		175		
Val	Val	Gly	Val	Thr	Ala	Met	Glu	Met	Glu	Thr	Gly	Glu	Val	Tyr	Ile	180		185		190		

Phe His Ala Lys Ala Val Met Phe Ala Thr Gly Gly Gly Gly Arg Ile  
195 200 205  
Tyr Ala Ser Ser Thr Asn Ala Tyr Met Asn Thr Gly Asp Gly Leu Gly  
210 215 220  
Ile Cys Ala Arg Ala Gly Ile Pro Leu Glu Asp Met Glu Phe Trp Gln  
225 230 235 240  
Phe His Pro Thr Gly Val Ala Gly Ala Gly Val Leu Ile Thr Glu Gly  
245 250 255  
Val Arg Gly Glu Gly Gly Ile Leu Leu Asn Ala Asp Gly Glu Arg Phe  
260 265 270  
Met Glu Arg Tyr Ala Pro Thr Val Lys Asp Leu Ala Ser Arg Asp Val  
275 280 285  
Val Ser Arg Ala Met Ala Met Glu Ile Tyr Glu Gly Arg Gly Cys Gly  
290 295 300  
Lys Asn Lys Asp His Val Leu Leu Lys Ile Asp His Ile Gly Ala Glu  
305 310 315 320  
Lys Ile Met Glu Lys Leu Pro Gly Ile Arg Glu Ile Ser Ile Gln Phe  
325 330 335  
Ala Gly Ile Asp Pro Ile Lys Asp Pro Ile Pro Val Val Pro Thr Thr  
340 345 350  
His Tyr Met Met Gly Gly Ile Pro Thr Asn Tyr His Gly Glu Val Val  
355 360 365  
Val Pro Gln Gly Asp Glu Tyr Glu Val Pro Val Lys Gly Leu Tyr Ala  
370 375 380  
Ala Gly Glu Cys Ala Cys Ala Ser Val His Gly Ala Asn Arg Leu Gly  
385 390 395 400  
Thr Asn Ser Leu Leu Asp Leu Val Val Phe Gly Lys Ala Ala Gly Asp  
405 410 415  
Ser Met Ile Lys Phe Ile Lys Glu Gln Ser Asp Trp Lys Pro Leu Pro  
420 425 430  
Ala Asn Ala Gly Glu Leu Thr Arg Gln Arg Ile Glu Arg Leu Asp Asn  
435 440 445  
Gln Thr Asp Gly Glu Asn Val Asp Ala Leu Arg Arg Glu Leu Gln Arg  
450 455 460  
Ser Val Gln Leu His Ala Gly Val Phe Arg Thr Asp Glu Ile Leu Ser  
465 470 475 480  
Lys Gly Val Arg Glu Val Met Ala Ile Ala Glu Arg Val Lys Arg Thr  
485 490 495

Glu Ile Lys Asp Lys Ser Lys Val Trp Asn Thr Ala Arg Ile Glu Ala  
 500 505 510  
 Leu Glu Leu Asp Asn Leu Ile Glu Val Ala Lys Ala Thr Leu Val Ser  
 515 520 525  
 Ala Glu Ala Arg Lys Glu Ser Arg Gly Ala His Ala Ser Asp Asp His  
 530 535 540  
 Pro Glu Arg Asp Asp Glu Asn Trp Met Lys His Thr Leu Tyr His Ser  
 545 550 555 560  
 Asp Ala Asn Thr Leu Ser Tyr Lys Pro Val His Thr Lys Pro Leu Ser  
 565 570 575  
 Val Glu Tyr Ile Lys Pro Ala Lys Arg Val Tyr  
 580 585

<210> 73  
 <211> 543  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 73  
 atgaagacac accgcaagac ctgctctgcg gtgtgttttg cttttcagac ggcacgcgaaa 60  
 cccgcggttt ccatccgaca tcccagcgag gacatcatga gcctgaaaac ccgccttacc 120  
 gaagatatga aaaccgcat ggcgcgcaaa gatcaagttt ccctcggcac catccgcctc 180  
 atcaatgccg ccgtcaaaca gtttgaagta gacgaacgca ccgaagccga cgatgccaaa 240  
 atcaccgcca tcctgaccaa aatggtcaaa cagcgcaaaag acggcgcgaa aatctacact 300  
 gaagccggcc gtcaggattt ggcagacaaa gaaaacgccc aaatcgacgt gctgcaccgc 360  
 tacctgccgc aaatgctctc cgccggcgaa atccgcaccg ccgtcgaagc agccgttgcc 420  
 gaaaaccggc cggcaggtat ggccgatatg ggcaaaagtga tggtcgtatt gaaaaccgc 480  
 ctgcgccgca aagccgatat gggcgaagtc aacaaaatct tgaaaaccgt actgaccgcc 540  
 tga 543

<210> 74  
 <211> 180  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 74  
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 1 5 10 15  
 Thr Ala Ser Lys Pro Ala Val Ser Ile Arg His Pro Ser Glu Asp Ile  
 20 25 30  
 Met Ser Leu Lys Thr Arg Leu Thr Glu Asp Met Lys Thr Ala Met Arg  
 35 40 45  
 Ala Lys Asp Gln Val Ser Leu Gly Thr Ile Arg Leu Ile Asn Ala Ala  
 50 55 60  
 Val Lys Gln Phe Glu Val Asp Glu Arg Thr Glu Ala Asp Asp Ala Lys  
 65 70 75 80



Ile Thr Ala Ile Leu Thr Lys Met Val Lys Gln Arg Lys Asp Gly Ala  
                     85                    90                    95  
 Lys Ile Tyr Thr Glu Ala Gly Arg Gln Asp Leu Ala Asp Lys Glu Asn  
                     100                    105                    110  
 Ala Glu Ile Asp Val Leu His Arg Tyr Leu Pro Gln Met Leu Ser Ala  
                     115                    120                    125  
 Gly Glu Ile Arg Thr Ala Val Glu Ala Ala Val Ala Glu Thr Gly Ala  
                     130                    135                    140  
 Ala Gly Met Ala Asp Met Gly Lys Val Met Val Val Leu Lys Thr Arg  
                     145                    150                    155                    160  
 Leu Ala Gly Lys Ala Asp Met Gly Glu Val Asn Lys Ile Leu Lys Thr  
                     165                    170                    175  
 Val Leu Thr Ala  
                     180

<210> 75  
 <211> 497  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 75  
 atgaggacac accgcaagac ctgctctgcg gtgtgttttg cttttcagac ggcacgcgaaa 60  
 cccgccgttt ccatccgaca tcccagcgag gacatcatga gcctgaaaat ccgccttacc 120  
 gaagacatga aaaccgcgat gcgcgcaaaa gaccaagtgt ccctcggcac catccgcctc 180  
 atcaacgccg ccgtcaaaca gtttgaagtg gacgaacgca ccgaagccga cgatgccaaa 240  
 atcaccgcca tcctgaccaa aatgggtcaaaa cagcgaaaaag acagcgcgaa aatctacact 300  
 gaagccggcc gtcaggattt ggcagacaaa gaaaacgccg aaatcgaggt actgcaccgc 360  
 taccttcccc aaatgctttc cgccggcgaa atccgtaccg aggtcgaagc tgccgttgcc 420  
 gaaaccggcg cggcaggtat ggcggatatg ggtaaaagtca tggggctgct gaaaacccgc 480  
 ctgcaggtta aagccga 497

<210> 76  
 <211> 165  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 76  
 Met Arg Thr His Arg Lys Thr Cys Ser Ala Val Cys Phe Ala Phe Gln  
   1                    5                    10                    15  
 Thr Ala Ser Lys Pro Ala Val Ser Ile Arg His Pro Ser Glu Asp Ile  
                     20                    25                    30  
 Met Ser Leu Lys Ile Arg Leu Thr Glu Asp Met Lys Thr Ala Met Arg  
                     35                    40                    45  
 Ala Lys Asp Gln Val Ser Leu Gly Thr Ile Arg Leu Ile Asn Ala Ala

50                                      55                                      60  
 Val Lys Gln Phe Glu Val Asp Glu Arg Thr Glu Ala Asp Asp Ala Lys  
 65                                      70                                      75                                      80  
 Ile Thr Ala Ile Leu Thr Lys Met Val Lys Gln Arg Lys Asp Ser Ala  
 85                                      90                                      95  
 Lys Ile Tyr Thr Glu Ala Gly Arg Gln Asp Leu Ala Asp Lys Glu Asn  
 100                                      105                                      110  
 Ala Glu Ile Glu Val Leu His Arg Tyr Leu Pro Gln Met Leu Ser Ala  
 115                                      120                                      125  
 Gly Glu Ile Arg Thr Glu Val Glu Ala Ala Val Ala Glu Thr Gly Ala  
 130                                      135                                      140  
 Ala Gly Met Ala Asp Met Gly Lys Val Met Gly Leu Leu Lys Thr Arg  
 145                                      150                                      155                                      160  
 Leu Ala Gly Lys Ala  
 165

<210> 77  
 <211> 657  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 77  
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 cttgaacaac tgatgcgttt cctccagttc ctgccggaat ttctgtttgc ccttttccgt 120  
 attttcacc ataaaagtaa ccgtgcgctt aaattcgccc gccgtcatca catccacatc 180  
 aatatcatgt tttttcaaca ggcggtggat attcggcact tccgccacca caccaccga 240  
 accgatgacc gcaaaccggag cggaacaat tttatccgcc acacacgcca tcatatagcc 300  
 gccgcttgcc gcgaccttat cgacggcgac ggtcagcgga atattgcgtt cgcgcaaacg 360  
 cctaagctgc gaagccgcca aaccgtaacc gtgaaccacg ccgcccggac tttccaatct 420  
 gagcagaacc tcatcttcag gcttggaat caaaagcacc gccgtaatct catgacgcaa 480  
 ggattctacg gcgtgtgcat acaaatcgcc gtcaaaatcc aacacaaaaa ggcgggattt 540  
 ttgcgtttcg gcagattttc ccccgccctc cttcaaagc tttttctctg ctttggttc 600  
 cgccttttc tttttctttt cttttttttc ctgatgtttt gtctcttct cgtttaa 657

<210> 78  
 <211> 218  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 78  
 Met Leu Ala Arg Arg Tyr Phe Phe Asn Ile Gln Pro Gly Ala Val Phe  
 1                                      5                                      10                                      15  
 Thr Asp Lys Leu Leu Glu Gln Leu Met Arg Phe Leu Gln Phe Leu Pro  
 20                                      25                                      30  
 Glu Phe Leu Phe Ala Leu Phe Arg Ile Phe Thr His Lys Ser Asn Arg  
 35                                      40                                      45

Ala Leu Lys Phe Ala Arg Arg His His Ile His Ile Asn Ile Met Phe  
     50                            55                            60  
 Phe Gln Gln Ala Val Asp Ile Arg His Phe Arg His His Thr His Arg  
     65                            70                            75                            80  
 Thr Asp Asp Arg Lys Arg Ser Gly Asn Asn Phe Ile Arg His Thr Arg  
                             85                            90                            95  
 His His Ile Ala Ala Cys Arg Asp Leu Ile Asp Gly Asp Gly Gln  
                             100                            105                            110  
 Arg Asn Ile Ala Phe Ala Gln Thr Pro Lys Leu Arg Ser Arg Gln Thr  
                             115                            120                            125  
 Val Thr Val Asn His Ala Ala Arg Thr Phe Gln Ser Glu Gln Asn Leu  
     130                            135                            140  
 Ile Phe Arg Leu Gly Asn Gln Lys His Arg Arg Asn Leu Met Thr Gln  
     145                            150                            155                            160  
 Gly Phe Tyr Gly Val Cys Ile Gln Ile Ala Val Lys Ile Gln His Lys  
                             165                            170                            175  
 Lys Ala Gly Phe Leu Arg Phe Gly Arg Phe Leu Pro Ala Leu Leu Gln  
                             180                            185                            190  
 Thr Leu Phe Leu Cys Phe Gly Phe Arg Leu Phe Leu Phe Leu Phe Phe  
     195                            200                            205  
 Phe Phe Leu Met Phe Cys Leu Phe Leu Ala  
     210                            215

<210> 79  
 <211> 657  
 <212> DNA  
 <213> Neisseria meningitidis

<220>  
 <221> misc\_feature  
 <222> (310)..(519)  
 <223> N is any nucleotide

<220>  
 <221> misc\_feature  
 <222> (541)  
 <223> N is any nucleotide

<400> 79  
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 attttcaccc ataaaagtaa ccgtgcgctt aaattcgccc gccgtcatca catccacatc 180  
 aatatcatgt tttttcaaca ggcggtggat attcgggtact tccgccacca caccacccga 240  
 accgacaatc gcaaacggag cggaagcaat tttatccgcc acacacgccca tcatataacc 300  
 gccgctcgcn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 360

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nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn 420
nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn 480
nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnnn aacacaaaaa ggcgtgattt 540
ntgcgttttcg gcagattttct ccccaccctc cttcaaactg ttttcctctg ctttggtctc 600
cgccttttcc tttttctttt cctctttttc ctgatgttgt gcctcttccc cgcttaa 657

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<210> 80
<211> 217
<212> PRT
<213> Neisseria meningitidis

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<220>
<221> UNSURE
<222> (104)..(172)
<223> Xaa is any amino acid

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<400> 80
Met Leu Ala Arg Cys His Phe Leu Asn Ile Gln Leu Arg Ala Val Leu
 1             5             10             15

Ala Asp Lys Leu Leu Glu Gln Leu Met Arg Phe Leu Gln Phe Leu Ser
      20             25             30

Glu Phe Leu Phe Ala Leu Phe Arg Ile Phe Thr His Lys Ser Asn Arg
      35             40             45

Ala Leu Lys Phe Ala Arg Arg His His Ile His Ile Asn Ile Met Phe
      50             55             60

Phe Gln Gln Ala Val Asp Ile Arg Tyr Phe Arg His His Thr His Arg
      65             70             75             80

Thr Asp Asn Arg Lys Arg Ser Gly Ser Asn Phe Ile Arg His Thr Arg
      85             90             95

His His Ile Thr Ala Ala Arg Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      100             105             110

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      115             120             125

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      130             135             140

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      145             150             155             160

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gln His Lys
      165             170             175

Lys Ala Phe Xaa Arg Phe Gly Arg Phe Leu Pro Thr Leu Leu Gln Thr
      180             185             190

Phe Phe Leu Cys Phe Gly Phe Arg Leu Phe Leu Phe Leu Phe Leu Phe
      195             200             205

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Phe Leu Met Leu Cys Leu Phe Pro Ala  
 210 215

<210> 81  
 <211> 657  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 81  
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 cttgaacaac tgatgcgttt cctccagttc ctgtcggaat ttctgtttgc cttttccgt 120  
 attttcaccc ataaaagtaa ccgtgcgctt aaattcgccc gccgtcatca catccacatc 180  
 aatatcatgt tttttcaaca ggcggtggat attcggtagt tccgctacaa caccaccca 240  
 accgacaatc gcaaacggag cggaacaat tttatccgcc acacacgcca tcatataacc 300  
 accgctcgcc gccaccttat cgacggcgac ggtcagcgga atattgcgtt cgcgcaaacg 360  
 cctaagctgc gaagccgcca aaccgtaacc gtgaaccacg ccgcccggac tttccaatct 420  
 aagcagaacc tcatcttcag gcttggaat caaaagcacc gccgtaatct catgacgcaa 480  
 ggattctacg gcgtgtgcat acaaatcgcc gtcaaaatcc aacacaaaaa ggcgggattt 540  
 ttgcgtttcg gaagattttc cccaccctc cttcaaacgc tttttctctg ctttggttc 600  
 cgccttttcc tttttctttt cctctttttc ctgatgtttt gcctcttccc cgcttaa 657

<210> 82  
 <211> 218  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 82  
 Met Leu Ala Arg Cys His Phe Leu Asn Ile Gln Leu Arg Ala Val Leu  
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 Ala Asp Lys Leu Leu Glu Gln Leu Met Arg Phe Leu Gln Phe Leu Ser  
 20 25 30  
 Glu Phe Leu Phe Ala Leu Phe Arg Ile Phe Thr His Lys Ser Asn Arg  
 35 40 45  
 Ala Leu Lys Phe Ala Arg Arg His His Ile His Ile Asn Ile Met Phe  
 50 55 60  
 Phe Gln Gln Ala Val Asp Ile Arg Tyr Phe Arg Tyr Asn Thr His Arg  
 65 70 75 80  
 Thr Asp Asn Arg Lys Arg Ser Gly Asn Asn Phe Ile Arg His Thr Arg  
 85 90 95  
 His His Ile Thr Thr Ala Arg Arg His Leu Ile Asp Gly Asp Gly Gln  
 100 105 110  
 Arg Asn Ile Ala Phe Ala Gln Thr Pro Lys Leu Arg Ser Arg Gln Thr  
 115 120 125  
 Val Thr Val Asn His Ala Ala Arg Thr Phe Gln Ser Lys Gln Asn Leu  
 130 135 140

Ile Phe Arg Leu Gly Asn Gln Lys His Arg Arg Asn Leu Met Thr Gln  
 145 150 155 160

Gly Phe Tyr Gly Val Cys Ile Gln Ile Ala Val Lys Ile Gln His Lys  
 165 170 175

Lys Ala Gly Phe Leu Arg Phe Gly Arg Phe Leu Pro Thr Leu Leu Gln  
 180 185 190

Thr Leu Phe Leu Cys Phe Gly Phe Arg Leu Phe Leu Phe Leu Phe Leu  
 195 200 205

Phe Phe Leu Met Phe Cys Leu Phe Pro Ala  
 210 215

<210> 83  
 <211> 657  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 83  
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 cttgaacaac tgatgcgttt cctccagttc ctgtcggaaat ttctgtttgc ctttttccgt 120  
 attttcaccc ataaaagtaa ccgtgcgctt aaattcgccc gccgtcatca catccacatc 180  
 aatatcatgt tttttcaaca ggcggtggat attcggtact tccgccacca caccaccga 240  
 accgacaatc gcaaacggag cggaagcaat tttatccgcc acacacgcca tcatataacc 300  
 gccgctcgcc gccaccttat cgacggcgac ggtcagcgga atattgcgtt cgcgcaaacg 360  
 cytaagctgc gaagccgcca aaccgtaacc gtgaaccacg ccgcccggac tttccaatct 420  
 gagcagaacc tcattcttcag gtttggaat caaaagcacc gccgtaatct catgacgcaa 480  
 ggattctacg gcgtgtgcat acaaatcgcc gtcaaaatcc aacacaaaaa ggcgggattt 540  
 ttgcgtttcg gcagatttct cccacccctc cttcaaacgc tttttctctg ctttggttc 600  
 cgccctttcc tttttctttt cctctttttc ctgatgtttt gcctcttccc cgcttaa 657

<210> 84  
 <211> 218  
 <212> PRT  
 <213> Neisseria meningitidis

<220>  
 <221> UNSURE  
 <222> (121)  
 <223> Xaa is any amino acid

<400> 84  
 Met Leu Ala Arg Cys His Phe Leu Asn Ile Gln Leu Arg Ala Val Leu  
 1 5 10 15

Ala Asp Lys Leu Leu Glu Gln Leu Met Arg Phe Leu Gln Phe Leu Ser  
 20 25 30

Glu Phe Leu Phe Ala Leu Phe Arg Ile Phe Thr His Lys Ser Asn Arg  
 35 40 45

Ala Leu Lys Phe Ala Arg Arg His His Ile His Ile Asn Ile Met Phe  
 50 55 60

Phe Gln Gln Ala Val Asp Ile Arg Tyr Phe Arg His His Thr His Arg  
 65 70 75 80  
 Thr Asp Asn Arg Lys Arg Ser Gly Ser Asn Phe Ile Arg His Thr Arg  
 85 90 95  
 His His Ile Thr Ala Ala Arg Arg His Leu Ile Asp Gly Asp Gly Gln  
 100 105 110  
 Arg Asn Ile Ala Phe Ala Gln Thr Xaa Lys Leu Arg Ser Arg Gln Thr  
 115 120 125  
 Val Thr Val Asn His Ala Ala Arg Thr Phe Gln Ser Glu Gln Asn Leu  
 130 135 140  
 Ile Phe Arg Leu Gly Asn Gln Lys His Arg Arg Asn Leu Met Thr Gln  
 145 150 155 160  
 Gly Phe Tyr Gly Val Cys Ile Gln Ile Ala Val Lys Ile Gln His Lys  
 165 170 175  
 Lys Ala Gly Phe Leu Arg Phe Gly Arg Phe Leu Pro Thr Leu Leu Gln  
 180 185 190  
 Thr Leu Phe Leu Cys Phe Gly Phe Arg Leu Phe Leu Phe Leu Phe Leu  
 195 200 205  
 Phe Phe Leu Met Phe Cys Leu Phe Pro Ala  
 210 215

<210> 85  
 <211> 657  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 85  
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 cttgaacaac tgatgcgttt cctccagttc ctgtcggaat ttctgtttgc ccttttccgt 120  
 attttcacccc ataaaagtaa ccgtgcgctt aaattcgccc gccgtcatca catccacatc 180  
 aatatcatgt tttttcaaca ggcggtggat attcggtact tccgctacaa caccaccga 240  
 accgacaatc gcaaacggag cggaacaat tttatccgcc acacacgcca tcatataacc 300  
 accgctcgcc gccaccttat cgacggcgac ggtcagcgga atattgcgtt cgcgcaaacg 360  
 cctaagctgc gaagccgcca aaccgtaacc gtgaaccacg ccgcccggac tttccaatct 420  
 aagcagaacc tcatcttcag gcttggcaat caaaagcacc gccgtaatct catgacgcaa 480  
 ggattctacg gcgtgtgcat acaaatcgcc gtcaaaatcc aacacaaaaa ggcgggattt 540  
 ttgcgtttcg gaagatttct cccacccctc cttcaaacgc tttttctctg ctttggtctc 600  
 cgccttttcc tttttctttt cctcttttcc ctgatgtttt gcctcttccc cgcttaa 657

<210> 86  
 <211> 218  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 86

Met Leu Ala Arg Cys His Phe Leu Asn Ile Gln Leu Arg Ala Val Leu  
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 Ala Asp Lys Leu Leu Glu Gln Leu Met Arg Phe Leu Gln Phe Leu Ser  
 20 25 30  
 Glu Phe Leu Phe Ala Leu Phe Arg Ile Phe Thr His Lys Ser Asn Arg  
 35 40 45  
 Ala Leu Lys Phe Ala Arg Arg His His Ile His Ile Asn Ile Met Phe  
 50 55 60  
 Phe Gln Gln Ala Val Asp Ile Arg Tyr Phe Arg Tyr Asn Thr His Arg  
 65 70 75 80  
 Thr Asp Asn Arg Lys Arg Ser Gly Asn Asn Phe Ile Arg His Thr Arg  
 85 90 95  
 His His Ile Thr Thr Ala Arg Arg His Leu Ile Asp Gly Asp Gly Gln  
 100 105 110  
 Arg Asn Ile Ala Phe Ala Gln Thr Pro Lys Leu Arg Ser Arg Gln Thr  
 115 120 125  
 Val Thr Val Asn His Ala Ala Arg Thr Phe Gln Ser Lys Gln Asn Leu  
 130 135 140  
 Ile Phe Arg Leu Gly Asn Gln Lys His Arg Arg Asn Leu Met Thr Gln  
 145 150 155 160  
 Gly Phe Tyr Gly Val Cys Ile Gln Ile Ala Val Lys Ile Gln His Lys  
 165 170 175  
 Lys Ala Gly Phe Leu Arg Phe Gly Arg Phe Leu Pro Thr Leu Leu Gln  
 180 185 190  
 Thr Leu Phe Leu Cys Phe Gly Phe Arg Leu Phe Leu Phe Leu Phe Leu  
 195 200 205  
 Phe Phe Leu Met Phe Cys Leu Phe Pro Ala  
 210 215

<210> 87

<211> 318

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 87

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 ttggattcgt acactttttg cccttttgtc atgatgctgt tgtcggcggc agaagcggcg 180  
 gcgcagaggc agcacaagat gaaggcggtc ggcagtcggg ttgtgttcat tggcgtttcc 240  
 cctaattgtt tgaaaccttg ttttttgatt ttgcctttac ggggtgaaaa gtttttttgg 300  
 cccaaatccg gaatttag 318



<210> 88  
<211> 105  
<212> PRT  
<213> *Neisseria gonorrhoeae*

<400> 88  
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1 5 10 15  
Gln Ser Asp Arg Lys Ser Gly Gly Asn Ala Val Pro Arg Pro Ser Pro  
20 25 30  
Phe Leu Pro Trp Gln Ala Met Gln Leu Asp Ser Tyr Thr Phe Cys Pro  
35 40 45  
Phe Val Met Met Leu Leu Ser Ala Ala Glu Ala Ala Gln Arg Gln  
50 55 60  
His Lys Met Lys Ala Val Gly Ser Arg Val Val Phe Ile Gly Val Ser  
65 70 75 80  
Pro Asn Val Leu Lys Pro Cys Phe Leu Ile Leu Pro Leu Arg Gly Glu  
85 90 95  
Lys Phe Phe Trp Pro Lys Ser Gly Ile  
100 105

<210> 89  
<211> 306  
<212> DNA  
<213> *Neisseria meningitidis*

<400> 89  
atgcctttga ccatgctgtg cagcagcacc tgcggttttt tcatgatgaa gtccgagcgg 60  
tagagcggcg gaaacatggt tccgcggcct tcgccctttt tgccgtggca ggcgacgcag 120  
ttgattcgt acactttttg cccttttgtc atgatgctgt tgcggcggc agaagcggcg 180  
gcgcagaagc agcccaagac gagggcggtc ggcagtcggg ttgtgttcat tgggtgtttcc 240  
ttcatgtttg aaaccttggt gttgattttg cgtagcgggt gaaagatttt tttgccgaat 300  
cagtag 306

<210> 90  
<211> 101  
<212> PRT  
<213> *Neisseria meningitidis*

<220>  
<221> UNSURE  
<222> (21)  
<223> Xaa is any amino acid

<220>  
<221> UNSURE  
<222> (94)  
<223> Xaa is any amino acid

<400> 90

Met Pro Leu Thr Met Leu Cys Ser Ser Thr Cys Gly Phe Phe Met Met  
1 5 10 15

Lys Ser Glu Arg Xaa Ser Gly Gly Asn Met Val Pro Arg Pro Ser Pro  
20 25 30

Phe Leu Pro Trp Gln Ala Thr Gln Leu Asp Ser Tyr Thr Phe Cys Pro  
35 40 45

Phe Val Met Met Leu Leu Ser Ala Ala Glu Ala Ala Ala Gln Lys Gln  
50 55 60

Pro Lys Thr Arg Ala Val Gly Ser Arg Val Val Phe Ile Gly Val Ser  
65 70 75 80

Phe Met Phe Glu Thr Leu Leu Leu Ile Leu Arg Ser Gly Xaa Lys Ile  
85 90 95

Phe Leu Pro Asn Gln  
100

<210> 91

<211> 306

<212> DNA

<213> Neisseria meningitidis

<400> 91

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tagagcggcg gaaacatggt tccgcggcct tcgccctttt tgccgtggca ggcgacgcag 120  
ttggattcgt acactttttg cccttttgtc atgatgctgt tgcggcggc agaagcggcg 180  
gcgcagaggc agcccaagac gagggcggtc ggcagtcggg ttgtgttcat tgggtgtttcc 240  
ttaatgtttg aaaccttggt gttgattttg cgtagcgggt gaaagatttt cttgccgaat 300  
cggtag 306

<210> 92

<211> 99

<212> PRT

<213> Neisseria meningitidis

<400> 92

Met Pro Leu Thr Met Leu Cys Ser Ser Thr Cys Gly Phe Phe Met Met  
1 5 10 15

Lys Ser Glu Arg Ser Gly Gly Asn Met Val Pro Arg Pro Ser Pro Phe  
20 25 30

Leu Pro Trp Gln Ala Thr Gln Leu Asp Ser Tyr Thr Phe Cys Pro Phe  
35 40 45

Val Met Met Leu Leu Ser Ala Ala Glu Ala Ala Ala Gln Arg Gln Pro  
50 55 60

Lys Thr Arg Ala Val Gly Ser Arg Val Val Phe Ile Gly Val Ser Leu

65		70		75		80									
Met	Phe	Glu	Thr	Leu	Leu	Leu	Ile	Leu	Arg	Ser	Gly	Lys	Ile	Phe	Leu
				85				90						95	

Pro Asn Arg

<210> 93  
 <211> 375  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 93

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ttcaacatcc gttttttcct acttttgaaa aatccagaaa agcccttggg cggtttttgg 120
aaagcactgc cccacctcaa cgacacgatg ctgctgttta cgggattgtg gctgatgaag 180
attacccatt tctccccgtt caacgcgcct tggtcgcgca caaaaatcct gctcctgttc 240
gcctacatcg cactgggcat ggtaatgatg cgcgcccgtc cgcgttcgac caagttctac 300
accgtttacc tgctcgctat gtgttgcac gcctgcatcg tttaccttgc caaaaccaa 360
gtcctgccat tctga                                     375
  
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<210> 94  
 <211> 124  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 94

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Thr	Ile	Leu	Val	Phe	Asn	Ile	Arg	Phe	Phe	Leu	Leu	Trp	Lys	Asn	Pro
			20					25					30		
Glu	Lys	Pro	Leu	Val	Gly	Phe	Trp	Lys	Ala	Leu	Pro	His	Leu	Asn	Asp
		35					40					45			
Thr	Met	Leu	Leu	Phe	Thr	Gly	Leu	Trp	Leu	Met	Lys	Ile	Thr	His	Phe
	50					55					60				
Ser	Pro	Phe	Asn	Ala	Pro	Trp	Leu	Gly	Thr	Lys	Ile	Leu	Leu	Leu	Phe
65				70						75					80
Ala	Tyr	Ile	Ala	Leu	Gly	Met	Val	Met	Met	Arg	Ala	Arg	Pro	Arg	Ser
			85					90						95	
Thr	Lys	Phe	Tyr	Thr	Val	Tyr	Leu	Leu	Ala	Met	Cys	Cys	Ile	Ala	Cys
			100				105						110		
Ile	Val	Tyr	Leu	Ala	Lys	Thr	Lys	Val	Leu	Pro	Phe				
		115					120								

<210> 95

<211> 285  
<212> DNA  
<213> Neisseria meningitidis

<400> 95  
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tggctcggta caaaaatcct gcttctgctc gcctatatcg cattgggtat gatgatgatg 180  
cgcgcccgtc cgcgttcgac caagttctac accgtttacc tgctcgccat gtgttgcgtc 240  
gcctgcatcg tttaccttgc caaaaccaa gtcctgcctt tctga 285

<210> 96  
<211> 94  
<212> PRT  
<213> Neisseria meningitidis

<400> 96  
Lys Ile Arg Lys Ala Leu Ala Gly Phe Trp Lys Ala Leu Pro His Leu  
1 5 10 15  
Asn Asp Thr Met Leu Leu Phe Thr Gly Leu Trp Leu Met Lys Ile Thr  
20 25 30  
His Phe Ser Pro Phe Asn Ala Pro Trp Leu Gly Thr Lys Ile Leu Leu  
35 40 45  
Leu Leu Ala Tyr Ile Ala Leu Gly Met Met Met Met Arg Ala Arg Pro  
50 55 60  
Arg Ser Thr Lys Phe Tyr Thr Val Tyr Leu Leu Ala Met Cys Cys Val  
65 70 75 80  
Ala Cys Ile Val Tyr Leu Ala Lys Thr Lys Val Leu Pro Phe  
85 90

<210> 97  
<211> 375  
<212> DNA  
<213> Neisseria meningitidis

<220>  
<221> misc\_feature  
<222> (79)  
<223> N is any nucleotide

<400> 97  
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ttcaacatcc gtgttttcnt actttggaaa aatccagaaa agcccttggc gggcttttgg 120  
aaggcaactgc cccaccttaa cgacaccatg ctgctgttta cgggattgtg gctgatgaaa 180  
attaccatt tctccccgtt caacgcgcct tggctcggta caaaaatcct gcttctgctc 240  
gcctatatcg cattgggtat gatgatgatg cgcgcccgtc cgcgttcgac caagttctac 300  
accgtttacc tgctcgccat gtgttgctc acctgcatcg tttaccttgc caaaaccaa 360  
gtcctgcctt tctga 375

<210> 98  
<211> 124  
<212> PRT  
<213> Neisseria meningitidis

<400> 98  
Met Gln Tyr Leu Ile Val Lys Tyr Ser His Gln Ile Phe Val Thr Ile  
1 5 10 15  
Thr Ile Leu Val Phe Asn Ile Arg Val Phe Xaa Leu Trp Lys Asn Pro  
20 25 30  
Glu Lys Pro Leu Ala Gly Phe Trp Lys Ala Leu Pro His Leu Asn Asp  
35 40 45  
Thr Met Leu Leu Phe Thr Gly Leu Trp Leu Met Lys Ile Thr His Phe  
50 55 60  
Ser Pro Phe Asn Ala Pro Trp Leu Gly Thr Lys Ile Leu Leu Leu Leu  
65 70 75 80  
Ala Tyr Ile Ala Leu Gly Met Met Met Met Arg Ala Arg Pro Arg Ser  
85 90 95  
Thr Lys Phe Tyr Thr Val Tyr Leu Leu Ala Met Cys Cys Leu Thr Cys  
100 105 110  
Ile Val Tyr Leu Ala Lys Thr Lys Val Leu Pro Phe  
115 120

<210> 99  
<211> 312  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 99  
atgcagcagg ggcagttggt tggacgcgtc gcccgcgaata aagatatgcg gaatgctggt 60  
ctgcatggtc agcggatcgg caacgggtac gccgcgcgcg tctttgtcga tattgatggt 120  
ttccaaaccg atattgtcaa cgttcggacg gcgacctacg gctgccaaca tatattcggc 180  
aacaaatacg cctttttcgc catcctgctc ccaatggact tctacattgc cgtctgcgtc 240  
gagtttgacc tcggttttag catccagatg cagtttcaat tcttctccga acacggcttt 300  
cgctcgtct ga 312

<210> 100  
<211> 103  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 100  
Met Gln Gln Gly Gln Leu Val Gly Arg Val Ala Arg Asn Lys Asp Met  
1 5 10 15  
Arg Asn Ala Gly Leu His Gly Gln Arg Ile Gly Asn Gly Tyr Ala Ala  
20 25 30

Arg Val Phe Val Asp Ile Asp Val Phe Gln Thr Asp Ile Val Asn Val  
35 40 45

Arg Thr Ala Thr Tyr Gly Cys Gln His Ile Phe Gly Asn Lys Tyr Ala  
50 55 60

Phe Phe Ala Ile Leu Leu Pro Met Asp Phe Tyr Ile Ala Val Cys Val  
65 70 75 80

Glu Phe Asp Leu Gly Phe Ser Ile Gln Met Gln Phe Gln Phe Phe Ser  
85 90 95

Glu His Gly Phe Arg Leu Val  
100

<210> 101  
<211> 312  
<212> DNA  
<213> Neisseria meningitidis

<400> 101  
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ttccaaaccg atattgtcaa cgttcggacg gcggcccacg gctgccagca tatattcggc 180  
aacaaatacg cctttttcgc catcctgctc ccaatggact tctacattgc cgtctgcatc 240  
gagtttgacc tcggttttag catccagatg cagtttcaat tcttcgccga acacggcggtt 300  
cgctcgtct ga 312

<210> 102  
<211> 103  
<212> PRT  
<213> Neisseria meningitidis

<400> 102  
Met Gln Gln Arg Gln Leu Val Gly Arg Ile Ala Cys Asp Glu Asp Met  
1 5 10 15

Arg Asn Thr Gly Leu His Gly Gln Arg Val Gly Asn Arg Tyr Ala Ala  
20 25 30

Arg Ile Phe Phe Asp Ile Asp Ile Phe Gln Thr Asp Ile Val Asn Val  
35 40 45

Arg Thr Ala Ala His Gly Cys Gln His Ile Phe Gly Asn Lys Tyr Ala  
50 55 60

Phe Phe Ala Ile Leu Leu Pro Met Asp Phe Tyr Ile Ala Val Cys Ile  
65 70 75 80

Glu Phe Asp Leu Gly Phe Ser Ile Gln Met Gln Phe Gln Phe Phe Ala  
85 90 95

Glu His Gly Val Arg Leu Val  
100

<210> 103  
<211> 312  
<212> DNA  
<213> *Neisseria meningitidis*

<400> 103  
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ttccaaaccg atattgtcaa cgttcggacg gcggcctacg gctgccagca tatattcggc 180  
aacaaatacg cttttttcgc catcctgctc ccaatggact tctacattgc cgtctgcgtc 240  
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cgctcgtct ga 312

<210> 104  
<211> 103  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 104  
Met Gln Gln Gly Gln Leu Val Gly Arg Val Ala Arg Asn Lys Asp Met  
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Arg Asn Thr Gly Leu His Ser Gln Arg Ile Gly Asn Gly Tyr Ala Ala  
20 25 30  
Arg Ile Phe Phe Asp Ile Asp Val Phe Gln Thr Asp Ile Val Asn Val  
35 40 45  
Arg Thr Ala Ala Tyr Gly Cys Gln His Ile Phe Gly Asn Lys Tyr Ala  
50 55 60  
Phe Phe Ala Ile Leu Leu Pro Met Asp Phe Tyr Ile Ala Val Cys Val  
65 70 75 80  
Glu Phe Gly Leu Gly Phe Ser Ile Gln Met Gln Phe Gln Phe Phe Thr  
85 90 95  
Glu His Gly Phe Arg Leu Val  
100

<210> 105  
<211> 268  
<212> DNA  
<213> *Neisseria gonorrhoeae*

<400> 105  
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accccggcag acaatataga aactgccgac ctttcggcaa gcgttccac ccgccctgcc 120  
gaaccggaag gaaaaacgct ggcagattac ggcggtacc cgtccgcact ggatgcagtg 180  
aaacagaaca acgatgcggc agccgccgcc tatttgaaa acgcaggaga cagcgcgatg 240  
gcggaaaatg tccgcaagga gtggctga 268

<210> 106

<211> 89  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 106  
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Pro Ala Gly Lys Thr Pro Ala Asp Asn Ile Glu Thr Ala Asp Leu Ser  
20 25 30  
Ala Ser Val Pro Thr Arg Pro Ala Glu Pro Glu Gly Lys Thr Leu Ala  
35 40 45  
Asp Tyr Gly Gly Tyr Pro Ser Ala Leu Asp Ala Val Lys Gln Asn Asn  
50 55 60  
Asp Ala Ala Ala Ala Tyr Leu Glu Asn Ala Gly Asp Ser Ala Met  
65 70 75 80  
Ala Glu Asn Val Arg Lys Glu Trp Leu  
85

<210> 107  
<211> 1572  
<212> DNA  
<213> Neisseria meningitidis

<400> 107  
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gacctttcgg caagcgttcc caccgcccct gccgaaccgg aaagaaaaac gctggcagat 180  
tacggcggct acccgctccgc actggatgca gtgaaacaga aaaacgatgc cggcgctgcc 240  
gcctatattg aaaacgcccg cgacagcgcg atggcgga aaatgtccgcaa cgagtggctg 300  
aagtctttg gcgcacgcag acagtggacg ctgtttgcac aggaatacgc caaactcgaa 360  
ccggcagggc gcgccaaga agtcgaatgc tacgccgatt cgagccgcaa cgactatacg 420  
cgtgccgctg aactggtcaa aaatacgggc aaactgcctt cgggctgcac caaactgttg 480  
gaacaggcag ccgcatccgg cttgttgac ggcaacgacg cctggaggcg cgtgcgcgga 540  
ctgctggccg gccgccaac cacagacgca cgcaaccttg ccgccgcatt gggcagcccg 600  
tttgacggcg gtacacaagg ttgcgcgcga tatgccctgt tgaacgtcat cggcaaagaa 660  
gcacgcaaat cgccgaatgc cgccgcccct ctgtccgaaa tggaaagcgg ttaagcctc 720  
gaacaacgca gtttcgcgtg gggcgatttg gggcattatc agtcgcaaaa cctcaatgtg 780  
cctgccgcct tggactatta cggcaagggt gccgaccgcc gccaactgac cgacgaccaa 840  
atcgagtgg acgcccgcgc cgccttgccg gcccgacgtt gggacgagct ggctccggt 900  
atctcgata tgcccga aaaactgcaaaa agcccgcact ggctctactg gctggcacgc 960  
agccgcgcgc caacgggcaa cagcaagag gcggaaaaac ttacaaaaca ggcggcagcg 1020  
acgggcagga atttttatgc ggtgctggca ggggaagaat tgggtcgga aatcgatacg 1080  
cgcaacaatg tgcccgatgc cggcaaaaac agcgtccgcc gcatggcgga agacggtgca 1140  
gtcaaacgcg cactggtact gttccaaaac agccaatctg ccggtgatgc aaaaatgcgc 1200  
cgtcaggctc aggcggaatg gcgttttgcc acacgcggct ttgacgaaga caagctgctg 1260  
accgccgcgc aaaccgcgtt cgaccacggt ttttacgata tggcggtcaa cagcgcgga 1320  
cgcaccgacc gcaaactcaa ctacaccttg cgctatat ttcgctttta agacacggtg 1380  
atccgccacg cgcaaaatgt taatgtcgat ccggccttggg tttatgggct gattcgtcag 1440  
gaaagccgct tcgttatagg cgcgcaatcc cgcgtaggcg cgcaggggct gatgcagggt 1500  
atgcctgcc cgcgcgcgca aatcgccggc aaaatcggtg tggatgccgc acaactttac 1560  
accgccgacg gg 1572



<210> 108  
 <211> 524  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 108

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Pro	Ala	Asp	Asn	Ile	Glu	Thr	Ala	Asp	Leu	Ser	Ala	Ser	Val	Pro	Thr	35	40	45	
Arg	Pro	Ala	Glu	Pro	Glu	Arg	Lys	Thr	Leu	Ala	Asp	Tyr	Gly	Gly	Tyr	50	55	60	
Pro	Ser	Ala	Leu	Asp	Ala	Val	Lys	Gln	Lys	Asn	Asp	Ala	Ala	Val	Ala	65	70	75	80
Ala	Tyr	Leu	Glu	Asn	Ala	Gly	Asp	Ser	Ala	Met	Ala	Glu	Asn	Val	Arg	85	90	95	
Asn	Glu	Trp	Leu	Lys	Ser	Leu	Gly	Ala	Arg	Arg	Gln	Trp	Thr	Leu	Phe	100	105	110	
Ala	Gln	Glu	Tyr	Ala	Lys	Leu	Glu	Pro	Ala	Gly	Arg	Ala	Gln	Glu	Val	115	120	125	
Glu	Cys	Tyr	Ala	Asp	Ser	Ser	Arg	Asn	Asp	Tyr	Thr	Arg	Ala	Ala	Glu	130	135	140	
Leu	Val	Lys	Asn	Thr	Gly	Lys	Leu	Pro	Ser	Gly	Cys	Thr	Lys	Leu	Leu	145	150	155	160
Glu	Gln	Ala	Ala	Ala	Ser	Gly	Leu	Leu	Asp	Gly	Asn	Asp	Ala	Trp	Arg	165	170	175	
Arg	Val	Arg	Gly	Leu	Leu	Ala	Gly	Arg	Gln	Thr	Thr	Asp	Ala	Arg	Asn	180	185	190	
Leu	Ala	Ala	Ala	Leu	Gly	Ser	Pro	Phe	Asp	Gly	Gly	Thr	Gln	Gly	Ser	195	200	205	
Arg	Glu	Tyr	Ala	Leu	Leu	Asn	Val	Ile	Gly	Lys	Glu	Ala	Arg	Lys	Ser	210	215	220	
Pro	Asn	Ala	Ala	Ala	Leu	Leu	Ser	Glu	Met	Glu	Ser	Gly	Leu	Ser	Leu	225	230	235	240
Glu	Gln	Arg	Ser	Phe	Ala	Trp	Gly	Val	Leu	Gly	His	Tyr	Gln	Ser	Gln	245	250	255	
Asn	Leu	Asn	Val	Pro	Ala	Ala	Leu	Asp	Tyr	Tyr	Gly	Lys	Val	Ala	Asp				

260					265					270					
Arg	Arg	Gln	Leu	Thr	Asp	Asp	Gln	Ile	Glu	Trp	Tyr	Ala	Arg	Ala	Ala
		275					280					285			
Leu	Arg	Ala	Arg	Arg	Trp	Asp	Glu	Leu	Ala	Ser	Val	Ile	Ser	His	Met
		290				295					300				
Pro	Glu	Lys	Leu	Gln	Lys	Ser	Pro	Thr	Trp	Leu	Tyr	Trp	Leu	Ala	Arg
					310					315					320
Ser	Arg	Ala	Ala	Thr	Gly	Asn	Thr	Gln	Glu	Ala	Glu	Lys	Leu	Tyr	Lys
				325					330					335	
Gln	Ala	Ala	Ala	Thr	Gly	Arg	Asn	Phe	Tyr	Ala	Val	Leu	Ala	Gly	Glu
				340				345					350		
Glu	Leu	Gly	Arg	Lys	Ile	Asp	Thr	Arg	Asn	Asn	Val	Pro	Asp	Ala	Gly
		355					360					365			
Lys	Asn	Ser	Val	Arg	Arg	Met	Ala	Glu	Asp	Gly	Ala	Val	Lys	Arg	Ala
		370				375					380				
Leu	Val	Leu	Phe	Gln	Asn	Ser	Gln	Ser	Ala	Gly	Asp	Ala	Lys	Met	Arg
				390						395					400
Arg	Gln	Ala	Gln	Ala	Glu	Trp	Arg	Phe	Ala	Thr	Arg	Gly	Phe	Asp	Glu
				405					410					415	
Asp	Lys	Leu	Leu	Thr	Ala	Ala	Gln	Thr	Ala	Phe	Asp	His	Gly	Phe	Tyr
				420				425					430		
Asp	Met	Ala	Val	Asn	Ser	Ala	Glu	Arg	Thr	Asp	Arg	Lys	Leu	Asn	Tyr
		435					440					445			
Thr	Leu	Arg	Tyr	Ile	Ser	Pro	Phe	Lys	Asp	Thr	Val	Ile	Arg	His	Ala
		450				455					460				
Gln	Asn	Val	Asn	Val	Asp	Pro	Ala	Trp	Val	Tyr	Gly	Leu	Ile	Arg	Gln
				470						475					480
Glu	Ser	Arg	Phe	Val	Ile	Gly	Ala	Gln	Ser	Arg	Val	Gly	Ala	Gln	Gly
				485				490						495	
Leu	Met	Gln	Val	Met	Pro	Ala	Thr	Ala	Arg	Glu	Ile	Ala	Gly	Lys	Ile
			500					505					510		
Gly	Met	Asp	Ala	Ala	Gln	Leu	Tyr	Thr	Ala	Asp	Gly				
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 <212> DNA  
 <213> Neisseria meningitidis  
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gacctttcgg caagcgttcc caccngccct gccgaaccgg aangaaaaac gtnggcagat 180  
tacggcggct acccgtcgcg actggatgca gtgaaacaga aaaacgatgc cgccgtcgcc 240  
gcctatattg aaaacgccgg cgacagcgcg atggcggaat atgtccgcaa cgagtggctg 300  
aagtctttg gcgcgcgcag acagtggacg ctgtntgcac angaatatgc naaactcgaa 360  
ccggcanggc gcgccaaga agtcgaatgc tacgccgatt cgagccgcaa cgactatacg 420  
cgtgccgccc aactggtcaa aaatacgggc aaactgcctt cgggctgcac caaactgttg 480  
gaacaggcag ccgcatccgg cttgttggac ggcaacgacg cctggaggcg cgtgcgcgga 540  
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tttgacggcg gtacacaagg ttcgcgcgaa tatgccctgt tgaacgtcat cggcaaagaa 660  
gcacgcaaat cgccgaatgc cgccgccctg ctgtccgaaa tggaaagcgg ttaagcctc 720  
gaacaacgca gtttcgcgtg gggcgattg gggcattatc agtcgcaaaa cctcaatgtg 780

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cctgccgcct tggactatta nggcaaggtt gccgaccgcc gccaaactgac cgacgaccaa 840
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ancncgnnnn tgcnnnganaa acnnnnnnan agncnnannt ngntnnantg nntggcacgc 960
agccgcgcgc cnacgggcaa cacgcaanan gcgganaaac tntacaaaca ggcggcagca 1020
ncgggcanga atttttatgc ngtgctgncn ggggaagagt tggggcgcan aatcgatacg 1080
cgcaacaatg tgcccgatgc cggcaaaaanc agcgtcctcc gtatggcgga agacggcgcg 1140
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cgtcnggctc aggcggaatg gcgtttcgcc acacgcggct tcgatgaaga caagctgctg 1260
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cgcaccgacc gcaaaactcaa ctacaccttg cgctacattt cgnnnnntna ngacacggtg 1380
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gaaagccgct tcgttatggg cgcgcaatcc cgcgtaggcg cgcaggggct gatgcaggtt 1500
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caaaacaacg aagtcctcgc caccgcaggc tataacgccg gtcccggcag ggcgcgccga 1680
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acgcgcgact atgtcaaaaa agtgatggcc aatgccgcct actacgcctc cctcttcggc 1800
gcgcgcgaca tcccgtcaa acagcgtatg ggcattgtcc ccgccgctg a 1851

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<210> 110
<211> 616
<212> PRT
<213> Neisseria meningitidis

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<220>
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<220>
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<220>  
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<222> (455)..(457)  
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<400> 110  
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20 25 30  
Pro Ala Asp Asn Ile Glu Thr Ala Asp Leu Ser Ala Ser Val Pro Thr  
35 40 45  
Xaa Pro Ala Glu Pro Glu Xaa Lys Thr Xaa Ala Asp Tyr Gly Gly Tyr  
50 55 60  
Pro Ser Ala Leu Asp Ala Val Lys Gln Lys Asn Asp Ala Ala Val Ala  
65 70 75 80  
Ala Tyr Leu Glu Asn Ala Gly Asp Ser Ala Met Ala Glu Asn Val Arg  
85 90 95  
Asn Glu Trp Leu Lys Ser Leu Gly Ala Arg Arg Gln Trp Thr Leu Xaa  
100 105 110  
Ala Xaa Glu Tyr Ala Lys Leu Glu Pro Ala Xaa Arg Ala Gln Glu Val  
115 120 125  
Glu Cys Tyr Ala Asp Ser Ser Arg Asn Asp Tyr Thr Arg Ala Ala Glu  
130 135 140  
Leu Val Lys Asn Thr Gly Lys Leu Pro Ser Gly Cys Thr Lys Leu Leu  
145 150 155 160  
Glu Gln Ala Ala Ala Ser Gly Leu Leu Asp Gly Asn Asp Ala Trp Arg  
165 170 175  
Arg Val Arg Gly Leu Leu Ala Gly Arg Gln Thr Thr Asp Ala Arg Asn  
180 185 190  
Leu Ala Ala Ala Leu Gly Ser Pro Phe Asp Gly Gly Thr Gln Gly Ser  
195 200 205  
Arg Glu Tyr Ala Leu Leu Asn Val Ile Gly Lys Glu Ala Arg Lys Ser  
210 215 220  
Pro Asn Ala Ala Ala Leu Leu Ser Glu Met Glu Ser Gly Leu Ser Leu  
225 230 235 240

Glu	Gln	Arg	Ser	Phe	Ala	Trp	Gly	Val	Leu	Gly	His	Tyr	Gln	Ser	Gln	245	250	255
Asn	Leu	Asn	Val	Pro	Ala	Ala	Leu	Asp	Tyr	Xaa	Gly	Lys	Val	Ala	Asp	260	265	270
Arg	Arg	Gln	Leu	Thr	Asp	Asp	Gln	Ile	Glu	Trp	Tyr	Ala	Arg	Ala	Ala	275	280	285
Xaa	Xaa	Xaa	Arg	Xaa	Xaa	Xaa	Xaa	Xaa	Ala	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	290	295	300
Xaa	Xaa	Lys	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Ala	Arg	305	310	315
Ser	Arg	Ala	Ala	Thr	Gly	Asn	Thr	Gln	Xaa	Ala	Xaa	Lys	Leu	Tyr	Lys	325	330	335
Gln	Ala	Ala	Ala	Xaa	Gly	Xaa	Asn	Phe	Tyr	Ala	Val	Leu	Xaa	Gly	Glu	340	345	350
Glu	Leu	Gly	Arg	Xaa	Ile	Asp	Thr	Arg	Asn	Asn	Val	Pro	Asp	Ala	Gly	355	360	365
Lys	Xaa	Ser	Val	Leu	Arg	Met	Ala	Glu	Asp	Gly	Ala	Ile	Lys	Arg	Ala	370	375	380
Leu	Val	Leu	Phe	Arg	Asn	Ser	Arg	Thr	Ala	Gly	Asp	Ala	Lys	Met	Arg	385	390	395
Arg	Xaa	Ala	Gln	Ala	Glu	Trp	Arg	Phe	Ala	Thr	Arg	Gly	Phe	Asp	Glu	405	410	415
Asp	Lys	Leu	Leu	Thr	Ala	Ala	Gln	Thr	Ala	Phe	Asp	His	Gly	Phe	Tyr	420	425	430
Asp	Met	Ala	Val	Asn	Ser	Ala	Glu	Arg	Thr	Asp	Arg	Lys	Leu	Asn	Tyr	435	440	445
Thr	Leu	Arg	Tyr	Ile	Ser	Xaa	Xaa	Xaa	Asp	Thr	Val	Ile	Arg	His	Ala	450	455	460
Gln	Asn	Val	Asn	Val	Asp	Pro	Ala	Trp	Val	Tyr	Gly	Leu	Ile	Arg	Gln	465	470	475
Glu	Ser	Arg	Phe	Val	Met	Gly	Ala	Gln	Ser	Arg	Val	Gly	Ala	Gln	Gly	485	490	495
Leu	Met	Gln	Val	Met	Pro	Ala	Thr	Ala	Arg	Glu	Ile	Ala	Gly	Lys	Ile	500	505	510
Gly	Met	Asp	Ala	Ala	Gln	Leu	Tyr	Thr	Ala	Asp	Gly	Asn	Ile	Arg	Met	515	520	525
Gly	Thr	Trp	Tyr	Met	Ala	Asp	Thr	Lys	Arg	Arg	Leu	Gln	Asn	Asn	Glu	530	535	540

Val Leu Ala Thr Ala Gly Tyr Asn Ala Gly Pro Gly Arg Ala Arg Arg  
545 550 555 560

Trp Gln Ala Asp Thr Pro Leu Glu Gly Ala Val Tyr Ala Glu Thr Ile  
565 570 575

Pro Phe Ser Glu Thr Arg Asp Tyr Val Lys Lys Val Met Ala Asn Ala  
580 585 590

Ala Tyr Tyr Ala Ser Leu Phe Gly Ala Pro His Ile Pro Leu Lys Gln  
595 600 605

Arg Met Gly Ile Val Pro Ala Arg  
610 615

<210> 111

<211> 342

<212> DNA

<213> Neisseria gonorrhoeae

<400> 111

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cctaaagaat atccggcatg gcaggcattt tttagtcaag cttgggtaaa agtatttacc 180  
caagtgagct ttatcgccgt attcttgac gcttgggtgg gtatccgcga tttgtggatg 240  
gactatatca aacccttcgg cgtgcgtttg tttttgcagg ttgccaccat tgtctggctg 300  
gtcggctgcc tcgtgtattc agttaaagtg atttgggggt aa 342

<210> 112

<211> 113

<212> PRT

<213> Neisseria gonorrhoeae

<400> 112

Met Val Glu Arg Lys Leu Thr Gly Ala His Tyr Gly Leu Arg Asp Trp  
1 5 10 15

Val Met Gln Arg Ala Thr Ala Val Ile Met Leu Ile Tyr Thr Val Ala  
20 25 30

Leu Leu Val Val Leu Phe Ala Leu Pro Lys Glu Tyr Pro Ala Trp Gln  
35 40 45

Ala Phe Phe Ser Gln Ala Trp Val Lys Val Phe Thr Gln Val Ser Phe  
50 55 60

Ile Ala Val Phe Leu His Ala Trp Val Gly Ile Arg Asp Leu Trp Met  
65 70 75 80

Asp Tyr Ile Lys Pro Phe Gly Val Arg Leu Phe Leu Gln Val Ala Thr  
85 90 95

Ile Val Trp Leu Val Gly Cys Leu Val Tyr Ser Val Lys Val Ile Trp  
100 105 110



Gly

<210> 113  
<211> 342  
<212> DNA  
<213> *Neisseria meningitidis*

<400> 113  
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cctaaagaat attcggcatg gcaggcattt tttagtcaaa cttgggtaaa agtatttacc 180  
  
caagtgaact tcatcgccgt attcctgcac gcttgggtgg gtatccgcga tttgtggatg 240  
gactatatca aacccttcgg cgtgcgtttg ttttgcagg ttgccaccat cgtttggctg 300  
gtcggctgtc tcgtgtattc agttaaagtg atttgggggt aa 342

<210> 114  
<211> 113  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 114  
Met Val Glu Arg Lys Leu Thr Gly Ala His Tyr Gly Leu Arg Asp Trp  
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Val Met Gln Arg Ala Thr Ala Val Ile Met Leu Ile Tyr Thr Val Ala  
20 25 30  
  
Leu Leu Val Val Leu Phe Ser Leu Pro Lys Glu Tyr Ser Ala Trp Gln  
35 40 45  
  
Ala Phe Phe Ser Gln Thr Trp Val Lys Val Phe Thr Gln Val Ser Phe  
50 55 60  
  
Ile Ala Val Phe Leu His Ala Trp Val Gly Ile Arg Asp Leu Trp Met  
65 70 75 80  
  
Asp Tyr Ile Lys Pro Phe Gly Val Arg Leu Phe Leu Gln Val Ala Thr  
85 90 95  
  
Ile Val Trp Leu Val Gly Cys Leu Val Tyr Ser Val Lys Val Ile Trp  
100 105 110

Gly

<210> 115  
<211> 342  
<212> DNA  
<213> *Neisseria meningitides*

<220>  
<221> Misc. Feature

<222> (249)  
<223> N is any nucleotide

<400> 115  
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cctaaagaat attcgcatg gcaggcattt tttagtcaaa cttgggtaaa agtatttacc 180  
caagtgaagct tcatcgccgt attcttgac gcttgggtgg gtatccgcga tttgtggatg 240  
gactatatna aacccttcgg cgtgcgtttg tttttgcagg ttgccaccat cgtctggctg 300  
gtcggctgct tgggtgtattc aattaaagta atttgggggt aa 342

<210> 116  
<211> 113  
<212> PRT  
<213> Neisseria meningitides

<220>  
<221> UNSURE  
<222> (83)  
<223> Xaa is any amino acid

<400> 116  
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20 25 30  
Leu Leu Val Val Leu Phe Ala Leu Pro Lys Glu Tyr Ser Ala Trp Gln  
35 40 45  
Ala Phe Phe Ser Gln Thr Trp Val Lys Val Phe Thr Gln Val Ser Phe  
50 55 60  
Ile Ala Val Phe Leu His Ala Trp Val Gly Ile Arg Asp Leu Trp Met  
65 70 75 80  
Asp Tyr Xaa Lys Pro Phe Gly Val Arg Leu Phe Leu Gln Val Ala Thr  
85 90 95  
Ile Val Trp Leu Val Gly Cys Leu Val Tyr Ser Ile Lys Val Ile Trp  
100 105 110

Gly

<210> 117  
<211> 1014  
<212> DNA  
<213> Neisseria meningitidis

<400> 117  
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tgcgccaccc aacagcctgc tcctgtcatt gcaggcaatt caggatgca gaccgtatcg 120  
tctgcgcggg ttacaatcc ttatggcgca acgccgtaca atgccgctcc tgccgccaac 180

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gatgcgccgt atgtgccgcc cgtgcaaact gcgcccgttt attcgccctcc tgcttatgtt 240
ccgccgtctg cacctgccgt ttcgggtaca tatgttcctt cttacgcacc cgtcgacatc 300
aacgcggcga cgcatactat tgtgcgtggc gacacggtgt acaacatttc caaacgctac 360
catatctctc aagacgattt ccgtgcgtgg aacggcatga ccgacaatac gttgagcatc 420
ggtcagattg ttaaagtcaa accggcagga tatgccgcac cgaaaaccgc agccgtagaa 480
agcaggcccc cgtaccggc tgccgcgcaa acccctgtga aaccgcgcgc gcaaccgccc 540
gttcagtccg cgccgcaacc tgccgcgccc gctgcggaaa ataaagcggg tcccgcctcc 600
gcgcccgcgc cgcaatctcc tgccgcttcg ccttcgcgca cgcgttcggg cggcggcatt 660
gtttggcagc gtccgaccca aggtaaagtg gttgccgatt tcggcggcgg caacaagggt 720
gtcgatattg ccggcaatgc cggacaaccc gttttggcgg cggtgacgg caaagtgggt 780
tatgccggtt caggtttgag gggatacggg aacttggtca tcatccagca caattcctct 840
ttcctgaccg cgtacgggca caacaaaaaa ttgctggtcg gcgaagggtc gcaggtcaaa 900
cgcggtcagc aggttgcttt gatgggtaat accgatgctt ccagaacgca gcttcatttc 960
gaggtgcgtc aaaacggcaa accggttaac ccgaacagct atatcgcggt ctga 1014

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<210> 118

<211> 337

<212> PRT

<213> Neisseria meningitidis

<400> 118

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Leu Leu Gly Gly Cys Ala Thr Gln Gln Pro Ala Pro Val Ile Ala Gly
      20                      25                      30

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Asn Ser Gly Met Gln Thr Val Ser Ser Ala Pro Val Tyr Asn Pro Tyr
      35                      40                      45

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Gly Ala Thr Pro Tyr Asn Ala Ala Pro Ala Ala Asn Asp Ala Pro Tyr
  50                      55                      60

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Val Pro Pro Val Gln Thr Ala Pro Val Tyr Ser Pro Pro Ala Tyr Val
  65                      70                      75                      80

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Pro Pro Ser Ala Pro Ala Val Ser Gly Thr Tyr Val Pro Ser Tyr Ala
      85                      90                      95

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Pro Val Asp Ile Asn Ala Ala Thr His Thr Ile Val Arg Gly Asp Thr
    100                      105                      110

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Val Tyr Asn Ile Ser Lys Arg Tyr His Ile Ser Gln Asp Asp Phe Arg
    115                      120                      125

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Ala Trp Asn Gly Met Thr Asp Asn Thr Leu Ser Ile Gly Gln Ile Val
    130                      135                      140

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Lys Val Lys Pro Ala Gly Tyr Ala Ala Pro Lys Thr Ala Ala Val Glu
    145                      150                      155                      160

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Ser Arg Pro Ala Val Pro Ala Ala Ala Gln Thr Pro Val Lys Pro Ala
      165                      170                      175

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Ala Gln Pro Pro Val Gln Ser Ala Pro Gln Pro Ala Ala Pro Ala Ala
    180                      185                      190

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Glu Asn Lys Ala Val Pro Ala Pro Ala Pro Ala Pro Gln Ser Pro Ala  
 195 200 205  
 Ala Ser Pro Ser Gly Thr Arg Ser Val Gly Gly Ile Val Trp Gln Arg  
 210 215 220  
 Pro Thr Gln Gly Lys Val Val Ala Asp Phe Gly Gly Gly Asn Lys Gly  
 225 230 235 240  
 Val Asp Ile Ala Gly Asn Ala Gly Gln Pro Val Leu Ala Ala Ala Asp  
 245 250 255  
 Gly Lys Val Val Tyr Ala Gly Ser Gly Leu Arg Gly Tyr Gly Asn Leu  
 260 265 270  
 Val Ile Ile Gln His Asn Ser Ser Phe Leu Thr Ala Tyr Gly His Asn  
 275 280 285  
 Gln Lys Leu Leu Val Gly Glu Gly Gln Gln Val Lys Arg Gly Gln Gln  
 290 295 300  
 Val Ala Leu Met Gly Asn Thr Asp Ala Ser Arg Thr Gln Leu His Phe  
 305 310 315 320  
 Glu Val Arg Gln Asn Gly Lys Pro Val Asn Pro Asn Ser Tyr Ile Ala  
 325 330 335

Phe

<210> 119  
 <211> 1056  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

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 catactattg tgcgcggcga cacggtgtac aacatttcca aacgctacca tatctctcaa 180  
 gacgatttcc gtgcgtggaa cggcatgacc gacaatacgt tgagcatcgg tcagattgtt 240  
 aaagtcaaac cggcaggata tgccgcaccg aaagccgcag ccgtaaaaag caggcccgcc 300  
 gtaccggctg ccgcgcaacc gcccgtagag tccgcacccg tcgacattaa cgcggcgacg 360  
 catactattg tgcgcggcga cacggtgtac aacatttcca aacgctacca tatctctcaa 420  
 gacgatttcc gtgcgtggaa cggcatgacc gacaatatgt tgagcatcgg tcagattgtt 480  
 aaagtcaaac cggcaggata tgccgcaccg aaaaccgcag ccgtagaaaag caggcccgcc 540  
 gtaccggctg ccgtgcaaac ccctgtgaaa ccgcgccgcg aaccgcctgt gcagtccgcg 600  
 ccgcaacctg ccgcgccccg tgcggaaaat aaagcgggtc ccgcgccgcg cccgcaatct 660  
 cctgccgctt cgccttccgg cacgcgttcg gtcggcggca ttgtttggca gcgtccgacg 720  
 caaggtaaaag tggttgccga tttcggcggc aacaacaagg gtgtcgatat tgccggtaat 780  
 gcgggacagc ccgttttggc ggcggtgac ggcaaaagg tttatgccgg ttcaggtttg 840  
 aggggatacg gaaacttggc catcatccag cataattctt ctttcttgac cgcatacggg 900  
 cacaaccaa aattgctggc cggcgagggg cagcagggtc aacgcgggtc gcaggttgct 960  
 ttgatgggca ataccgatgc ttccagaacg cagcttcatt tcgaggtgcg tcaaaacggc 1020  
 aaaccgggta acccgaacag ctatatcgcg ttctga 1056

<210> 120  
<211> 509  
<212> PRT  
<213> Neisseria meningitidis

<400> 120

Met Ala Ala Ala Asp Lys Gln Leu Gly Ser Asp Arg Arg Ser Val Ala  
1 5 10 15

Ile Ile Gly Asp Gly Ala Met Thr Ala Gly Gln Ala Phe Glu Ala Leu  
20 25 30

Asn Cys Ala Gly Asp Met Asp Val Asp Leu Leu Val Val Leu Asn Asp  
35 40 45

Asn Glu Met Ser Ile Ser Pro Asn Val Gly Ala Leu Pro Lys Tyr Leu  
50 55 60

Ala Ser Asn Val Val Arg Asp Met His Gly Leu Leu Ser Thr Val Lys  
65 70 75 80

Ala Gln Thr Gly Lys Val Leu Asp Lys Ile Pro Gly Ala Met Glu Phe  
85 90 95

Ala Gln Lys Val Glu His Lys Ile Lys Thr Leu Ala Glu Glu Ala Glu  
100 105 110

His Ala Lys Gln Ser Leu Ser Leu Phe Glu Asn Phe Gly Phe Arg Tyr  
115 120 125

Thr Gly Pro Val Asp Gly His Asn Val Glu Asn Leu Val Asp Val Leu  
130 135 140

Glu Asp Leu Arg Gly Arg Lys Gly Pro Gln Leu Leu His Val Ile Thr  
145 150 155 160

Lys Lys Gly Asn Gly Tyr Lys Leu Ala Glu Asn Asp Pro Val Lys Tyr  
165 170 175

His Ala Val Ala Asn Leu Pro Lys Glu Ser Ala Ala Gln Met Pro Ser  
180 185 190

Glu Lys Glu Pro Lys Pro Ala Ala Lys Pro Thr Tyr Thr Gln Val Phe  
195 200 205

Gly Lys Trp Leu Cys Asp Arg Ala Ala Ala Asp Ser Arg Leu Val Ala  
210 215 220

Ile Thr Pro Ala Met Arg Glu Gly Ser Gly Leu Val Glu Phe Glu Gln  
225 230 235 240

Arg Phe Pro Asp Arg Tyr Phe Asp Val Gly Ile Ala Glu Gln His Ala  
245 250 255

Val Thr Phe Ala Gly Gly Leu Ala Cys Glu Gly Met Lys Pro Val Val  
260 265 270

Ala Ile Tyr Ser Thr Phe Leu Gln Arg Ala Tyr Asp Gln Leu Val His  
275 280 285

Asp Ile Ala Leu Gln Asn Leu Pro Val Leu Phe Ala Val Asp Arg Ala  
290 295 300

Gly Ile Val Gly Ala Asp Gly Pro Thr His Ala Gly Leu Tyr Asp Leu  
305 310 315 320

Ser Phe Leu Arg Cys Ile Pro Asn Met Ile Val Ala Ala Pro Ser Asp  
325 330 335

Glu Asn Glu Cys Arg Leu Leu Leu Ser Thr Cys Tyr Gln Ala Asp Ala  
340 345 350

Pro Ala Ala Val Arg Tyr Pro Arg Gly Thr Gly Thr Gly Val Pro Val  
355 360 365

Ser Asp Gly Met Glu Thr Val Glu Ile Gly Lys Gly Ile Ile Arg Arg  
370 375 380

Glu Gly Glu Lys Thr Ala Phe Ile Ala Phe Gly Ser Met Val Ala Pro  
385 390 395 400

Ala Leu Ala Val Ala Gly Lys Leu Asn Ala Thr Val Ala Asp Met Arg  
405 410 415

Phe Val Lys Pro Ile Asp Glu Glu Leu Ile Val Arg Leu Ala Arg Ser  
420 425 430

His Asp Arg Ile Val Thr Leu Glu Glu Asn Ala Glu Gln Gly Gly Ala  
435 440 445

Gly Ser Ala Val Leu Glu Val Leu Ala Lys His Gly Ile Cys Lys Pro  
450 455 460

Val Leu Leu Leu Gly Val Ala Asp Thr Val Thr Gly His Gly Asp Pro  
465 470 475 480

Lys Lys Leu Leu Asp Asp Leu Gly Leu Ser Ala Glu Ala Val Glu Arg  
485 490 495

Arg Val Arg Ala Trp Leu Ser Asp Arg Asp Ala Ala Asn  
500 505

<210> 121

<211> 1140

<212> DNA

<213> Neisseria gonorrhoeae

<400> 121

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aacagctacg gctgcccgc gttcaacgtc aacaacctcg aacaaatgcg cgccattatg 180  
gaagccgccc accaagtcaa cgcgcccgtc atcgtacagg cgagcgcagg tgcgcgcaaa 240

tacgcgggcg cgccgttttt ggcgcacctg attctggcgg cagtcgaaga atttccgcac 300  
 atccccgtcg tgatgcacca agaccacggc gcatcgcccg acgtgtgcca acgctccatc 360  
 caactgggct tctcctccgt gatgatggac ggctctttgc tcgaagacgg caaaaccctt 420  
 tcttcttacg aatacaacgt caacgccacc cgtaccgtcg tcaacttctc ccacgcctgc 480  
 ggcgtgtccg tcgaaggcga aatcggcgta ttgggcaacc tcgaaaccgg cgaagcaggc 540  
 gaagaagacg gagtgggcgc ggcaggcaaa ctctcacacg accaaatgct caccagcggt 600  
 gaagatgccg tgcgtttcgt taaagatacc ggcgttgacg cattggcgat tgccgtcggc 660  
 accagccacg gcgcatacaa attcaccctg cgcgccacag gcgacgtatt gcgtatcgac 720  
 cgcatacaag aaatccacca agccctgccc aatacacaca tcgtgatgca cggctccagc 780  
 tccgttccgc aagaatggct gaaagtcatt aacgaatacg gcggcaatat cggcgaaacc 840  
 tacggcgtgc cggttgaaga aatcgtcgaa ggcatacaac acggcgtgcg caaagtcaac 900  
 atcgataccg acctgcgcct cgcttccacc ggcgcggtac gccgctacct tgccgaaaac 960  
 ccgtccgact ttgatccgcg caaatacttg ggcaaaacca ttgaagcgat gaagcaaatc 1020  
 tgccctgacc gttatcttgc gttcgggtgc gaaggtcagg caggcaaaat caaacctgtt 1080  
 tcgttggaag aaatggcaag ccgttatgcc aagggcgaat tgaaccaaataa 1140

<210> 122  
 <211> 379  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 122

Met Ser Arg Leu Trp Phe Phe Ala Val Lys Asn Ile Ile Ile Arg Leu  
 1 5 10 15

Ile Tyr Leu Leu Pro Lys Glu Thr Gln Met Ala Leu Val Ser Met Arg  
 20 25 30

Gln Leu Leu Asp His Ala Ala Glu Asn Ser Tyr Gly Leu Pro Ala Phe  
 35 40 45

Asn Val Asn Asn Leu Glu Gln Met Arg Ala Ile Met Glu Ala Ala Asp  
 50 55 60

Gln Val Asn Ala Pro Val Ile Val Gln Ala Ser Ala Gly Ala Arg Lys  
 65 70 75 80

Tyr Ala Gly Ala Pro Phe Leu Arg His Leu Ile Leu Ala Ala Val Glu  
 85 90 95

Glu Phe Pro His Ile Pro Val Val Met His Gln Asp His Gly Ala Ser  
 100 105 110

Pro Asp Val Cys Gln Arg Ser Ile Gln Leu Gly Phe Ser Ser Val Met  
 115 120 125

Met Asp Gly Ser Leu Leu Glu Asp Gly Lys Thr Pro Ser Ser Tyr Glu  
 130 135 140

Tyr Asn Val Asn Ala Thr Arg Thr Val Val Asn Phe Ser His Ala Cys  
 145 150 155 160

Gly Val Ser Val Glu Gly Glu Ile Gly Val Leu Gly Asn Leu Glu Thr  
 165 170 175

Gly Glu Ala Gly Glu Glu Asp Gly Val Gly Ala Ala Gly Lys Leu Ser

180	185	190
His Asp Gln Met Leu Thr Ser Val Glu Asp Ala Val Arg Phe Val Lys		
195	200	205
Asp Thr Gly Val Asp Ala Leu Ala Ile Ala Val Gly Thr Ser His Gly		
210	215	220
Ala Tyr Lys Phe Thr Arg Pro Pro Thr Gly Asp Val Leu Arg Ile Asp		
225	230	235
Arg Ile Lys Glu Ile His Gln Ala Leu Pro Asn Thr His Ile Val Met		
	245	250
His Gly Ser Ser Ser Val Pro Gln Glu Trp Leu Lys Val Ile Asn Glu		
	260	265
Tyr Gly Gly Asn Ile Gly Glu Thr Tyr Gly Val Pro Val Glu Glu Ile		
	275	280
Val Glu Gly Ile Lys His Gly Val Arg Lys Val Asn Ile Asp Thr Asp		
	290	295
Leu Arg Leu Ala Ser Thr Gly Ala Val Arg Arg Tyr Leu Ala Glu Asn		
305	310	315
Pro Ser Asp Phe Asp Pro Arg Lys Tyr Leu Gly Lys Thr Ile Glu Ala		
	325	330
Met Lys Gln Ile Cys Leu Asp Arg Tyr Leu Ala Phe Gly Cys Glu Gly		
	340	345
Gln Ala Gly Lys Ile Lys Pro Val Ser Leu Glu Lys Met Ala Ser Arg		
	355	360
Tyr Ala Lys Gly Glu Leu Asn Gln Ile Val Lys		
370	375	

<210> 123

<211> 771

<212> DNA

<213> Neisseria meningitidis

<400> 123

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atgagctggt tatggttttt tgctgtaaaa aacattataa tccgccttat ttacctattg 60
cccaaggaga cacaaatggc actcgtatcc atgcgccaac tgcttgatca tgctgccgaa 120
wacagctacg gcytgccggc gttcaacgtc aacaacctcg wacagatgcg cgccatcatg 180
gaggctgcag accaagtcga cgcctccgtc atcgtacagg cgagtgccgg tgcgcgcaaa 240
tatgcgggtg cgcggttttt acgccacctg attttggcgg ctgtcgaagt atttccacac 300
atccccgtcg tcatgcacca agaccacggc gcatcaccgg acgtgtgcca acgctccatc 360
caactgggct tctcctctgt aatgatggac ggctcgtgta tggaagacgg caaaacccct 420
tcttcttacg aatacaacgt caacgccaca cgtaccgtgg ttaacttctc ccacgcttgc 480
ggcgtatccg ttgaaggcga aatcggcgta ttgggcaacc tcgaaaccgg cgatgcaggc 540
gaagaagacg gtgtaggcgc agtgggcaaa ctttccacag accaaatgct gaccagcgct 600
gaagatgccg tatgtttcgt taaagatacc ggcggtgacg cattggctat tgccgtcggc 660
accagccacg gcgcatacaa attcaccgct ccgcccacag gcgatgtatt acgtatcgac 720

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cgcatcaaag aaatccacca agccctgccc aatacacaca tcgtgatgca c

771

<210> 124  
<211> 257  
<212> PRT  
<213> Neisseria meningitides

<220>  
<221> UNSURE  
<222> (41)  
<223> Xaa is any amino acid

<220>  
<221> UNSURE  
<222> (54)  
<223> Xaa is any amino acid

<400> 124  
Met Ser Cys Leu Trp Phe Phe Ala Val Lys Asn Ile Ile Ile Arg Leu  
1 5 10 15  
Ile Tyr Leu Leu Pro Lys Glu Thr Gln Met Ala Leu Val Ser Met Arg  
20 25 30  
Gln Leu Leu Asp His Ala Ala Glu Xaa Ser Tyr Gly Leu Pro Ala Phe  
35 40 45  
Asn Val Asn Asn Leu Xaa Gln Met Arg Ala Ile Met Glu Ala Ala Asp  
50 55 60  
Gln Val Asp Ala Pro Val Ile Val Gln Ala Ser Ala Gly Ala Arg Lys  
65 70 75 80  
Tyr Ala Gly Ala Pro Phe Leu Arg His Leu Ile Leu Ala Ala Val Glu  
85 90 95  
Val Phe Pro His Ile Pro Val Val Met His Gln Asp His Gly Ala Ser  
100 105 110  
Pro Asp Val Cys Gln Arg Ser Ile Gln Leu Gly Phe Ser Ser Val Met  
115 120 125  
Met Asp Gly Ser Leu Met Glu Asp Gly Lys Thr Pro Ser Ser Tyr Glu  
130 135 140  
Tyr Asn Val Asn Ala Thr Arg Thr Val Val Asn Phe Ser His Ala Cys  
145 150 155 160  
Gly Val Ser Val Glu Gly Glu Ile Gly Val Leu Gly Asn Leu Glu Thr  
165 170 175  
Gly Asp Ala Gly Glu Glu Asp Gly Val Gly Ala Val Gly Lys Leu Ser  
180 185 190  
His Asp Gln Met Leu Thr Ser Val Glu Asp Ala Val Cys Phe Val Lys

195

200

205

Asp Thr Gly Val Asp Ala Leu Ala Ile Ala Val Gly Thr Ser His Gly  
210 215 220

Ala Tyr Lys Phe Thr Arg Pro Pro Thr Gly Asp Val Leu Arg Ile Asp  
225 230 235 240

Arg Ile Lys Glu Ile His Gln Ala Leu Pro Asn Thr His Ile Val Met  
245 250 255

His

&lt;210&gt; 125

&lt;211&gt; 1140

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 125

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cccaaggaga cacaaatggc actcgtatcc atgcgccaac tgcttgatca tgctgccgaa 120
aacagctacg gcctgcccgc gttcaacgtc aacaacctcg aacaaatgcg cgccattatg 180
gaagccgccg accaagtcaa cgcgcccgtc atcgtacagg cgagcgcagg tgcgcgcaaa 240
tacgcggggc cgccgttttt gcgccacctg attttggcgg ctgtcgaaga atttccgcac 300
atccccgtcg tgatgcacca agaccacggc gcacgcgccg acgtgtgcca acgctccatc 360
caactgggct tttcctccgt gatgatggac ggctcgtga tggaagacgg caaaacccct 420
tcttcttatg aatacaacgt caacgccacc cgtaccgtgg ttaatttctc ccacgcctgc 480
ggcgtatccg ttgaaggcga aatcggcgta ttgggcaacc tcgaaactgg cgaagccggc 540
gaagaagacg gtgtaggcgc agtgggcaaa ctttcccacg accaaatgct caccagcgtc 600
gaagatgccg tgcgtttcgt taaagatacc ggcgttgacg cattggcgat tgccgtcggc 660
accagccacg gcgcgtacaa attcaccctg ccgcccacag gcgacgtgtt gcgtatcgac 720
cgcatacaag aaatccacca agccctgccc aatacacaca tcgtgatgca cggctccagc 780
tccgttccgc aagaatggct gaaagtcac aacgaatacg gcggcaatat cggcgaaacc 840
tacggcgtgc cggttgaaga aatcgtcgaa ggcatcaaac acggcgtgcg taaagtcaac 900
atcgataccg acttgcgcct tgcttccacc ggcgcggtac gccgctacct tgccgaaaac 960
ccgtccgact tcgatccgcg caaatatttg agcaaaacca ttgaagcgat gaagcaaatc 1020
tgccctgacc gctacctgcg gttcgggttg gaaggtcagg caggcaaaat caaaccggtt 1080
tccttggaaa aaatggcaaa ccgttatgcc aagggcgaat tgaaccaaat cgtcaaataa 1140

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&lt;210&gt; 126

&lt;211&gt; 379

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 126

Met Ser Arg Leu Trp Phe Phe Ala Ala Lys Asn Ile Ile Ile Arg Leu  
1 5 10 15

Ile Tyr Leu Leu Pro Lys Glu Thr Gln Met Ala Leu Val Ser Met Arg  
20 25 30

Gln Leu Leu Asp His Ala Ala Glu Asn Ser Tyr Gly Leu Pro Ala Phe  
35 40 45

Asn	Val	Asn	Asn	Leu	Glu	Gln	Met	Arg	Ala	Ile	Met	Glu	Ala	Ala	Asp	50	55	60	
Gln	Val	Asn	Ala	Pro	Val	Ile	Val	Gln	Ala	Ser	Ala	Gly	Ala	Arg	Lys	65	70	75	80
Tyr	Ala	Gly	Ala	Pro	Phe	Leu	Arg	His	Leu	Ile	Leu	Ala	Ala	Val	Glu	85	90	95	
Glu	Phe	Pro	His	Ile	Pro	Val	Val	Met	His	Gln	Asp	His	Gly	Ala	Ser	100	105	110	
Pro	Asp	Val	Cys	Gln	Arg	Ser	Ile	Gln	Leu	Gly	Phe	Ser	Ser	Val	Met	115	120	125	
Met	Asp	Gly	Ser	Leu	Met	Glu	Asp	Gly	Lys	Thr	Pro	Ser	Ser	Tyr	Glu	130	135	140	
Tyr	Asn	Val	Asn	Ala	Thr	Arg	Thr	Val	Val	Asn	Phe	Ser	His	Ala	Cys	145	150	155	160
Gly	Val	Ser	Val	Glu	Gly	Glu	Ile	Gly	Val	Leu	Gly	Asn	Leu	Glu	Thr	165	170	175	
Gly	Glu	Ala	Gly	Glu	Glu	Asp	Gly	Val	Gly	Ala	Val	Gly	Lys	Leu	Ser	180	185	190	
His	Asp	Gln	Met	Leu	Thr	Ser	Val	Glu	Asp	Ala	Val	Arg	Phe	Val	Lys	195	200	205	
Asp	Thr	Gly	Val	Asp	Ala	Leu	Ala	Ile	Ala	Val	Gly	Thr	Ser	His	Gly	210	215	220	
Ala	Tyr	Lys	Phe	Thr	Arg	Pro	Pro	Thr	Gly	Asp	Val	Leu	Arg	Ile	Asp	225	230	235	240
Arg	Ile	Lys	Glu	Ile	His	Gln	Ala	Leu	Pro	Asn	Thr	His	Ile	Val	Met	245	250	255	
His	Gly	Ser	Ser	Ser	Val	Pro	Gln	Glu	Trp	Leu	Lys	Val	Ile	Asn	Glu	260	265	270	
Tyr	Gly	Gly	Asn	Ile	Gly	Glu	Thr	Tyr	Gly	Val	Pro	Val	Glu	Glu	Ile	275	280	285	
Val	Glu	Gly	Ile	Lys	His	Gly	Val	Arg	Lys	Val	Asn	Ile	Asp	Thr	Asp	290	295	300	
Leu	Arg	Leu	Ala	Ser	Thr	Gly	Ala	Val	Arg	Arg	Tyr	Leu	Ala	Glu	Asn	305	310	315	320
Pro	Ser	Asp	Phe	Asp	Pro	Arg	Lys	Tyr	Leu	Ser	Lys	Thr	Ile	Glu	Ala	325	330	335	
Met	Lys	Gln	Ile	Cys	Leu	Asp	Arg	Tyr	Leu	Ala	Phe	Gly	Cys	Glu	Gly	340	345	350	

Gln Ala Gly Lys Ile Lys Pro Val Ser Leu Glu Lys Met Ala Asn Arg  
 355 360 365

Tyr Ala Lys Gly Glu Leu Asn Gln Ile Val Lys  
 370 375

<210> 127  
 <211> 816  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 127  
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 agcagcaggc gttgcgtgcc ttcgggcaga tgtgcgtacc aatattcgag cagggcggac 120  
 gcaacgcccc gtcggcggca ttcgggcgcg gtggcaatca ggtgcagttc ggattcgtcg 180  
 ggcaggttct gccaaacgat aaaggcggca atcctgccgt ctttttccgc aaggaaaacc 240  
 tgttcggacg gcgaaacaag cgcggactca aattggcgtt gcgtccacgc ggacgggttg 300  
 cagacggtat cgagcgcggc cagtgcggcg cagtcggacg gtgaggctgg gcggatgttc 360  
 atgttcgtgc cttcgtttcc gcctgtttct tggcagtcag ggcgattttg ttgcggacgt 420  
 agagcagttc ggcggtgtgc gcgccagttg cgggatagcc gccgccgagg gcgagcgcga 480  
 gaaaatcggc ggcggtcggc atatcgggtt tgcctgagaa gggcggacgg ttttccagtg 540  
 cgaacgcact gccgatgccg tctgaaaaga cgtacccctc ggggagggca atgtctgccg 600  
 ccctaccgac ttgataatcg ctcaaaccgc ggcggttcag cgtgtcgaac cacgcataaa 660  
 acacttcgcc catacgcgcg tccgcagcgg cgagtatgca gctttgcggc ggccggcagcg 720  
 aggcggcggc atcgagcgtg gggatgccga ttaaaggcgt gtcgaacggc gttgccaaac 780  
 cttgcgccac gccgatgccg atacgcagtc cggtaa 816

<210> 128  
 <211> 271  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 128  
 Met Leu Lys Pro Cys Leu Val Tyr Ser Ala Cys Ala Ala Ala Leu Pro  
 1 5 10 15  
 Ala Arg Thr Ser Ser Ser Arg Arg Cys Val Pro Ser Gly Arg Cys Ala  
 20 25 30  
 Tyr Gln Tyr Ser Ser Arg Ala Asp Ala Thr Pro Arg Arg Arg His Ser  
 35 40 45  
 Gly Ala Val Ala Ile Arg Cys Ser Ser Asp Ser Ser Gly Arg Phe Cys  
 50 55 60  
 Gln Thr Ile Lys Ala Ala Ile Leu Pro Ser Phe Ser Ala Arg Lys Thr  
 65 70 75 80  
 Cys Ser Asp Gly Glu Thr Ser Ala Asp Ser Asn Trp Arg Cys Val His  
 85 90 95  
 Ala Asp Gly Leu Gln Thr Val Ser Ser Ala Ala Ser Ala Ala Gln Ser  
 100 105 110  
 Asp Gly Glu Ala Gly Arg Met Phe Met Phe Val Pro Ser Val Pro Pro

115	120	125
Val Leu Trp Gln Ser Gly Arg Phe Cys Cys Gly Arg Arg Ala Val Arg		
130	135	140
Arg Val Pro Arg Gln Leu Arg Asp Ser Arg Arg Arg Gly Arg Ala Arg		
145	150	155
Glu Asn Arg Arg Arg Ser Ala Tyr Arg Val Cys Leu Arg Arg Ala Asp		
	165	170
Gly Phe Pro Val Arg Thr His Cys Arg Cys Arg Leu Lys Arg Arg Thr		
	180	185
Pro Arg Gly Gly Gln Cys Leu Pro Pro Tyr Arg Leu Asp Asn Arg Ser		
	195	200
Asn Gly Gly Gly Ser Ala Cys Arg Thr Thr His Lys Thr Leu Arg Pro		
	210	215
Tyr Ala Arg Pro Gln Arg Arg Val Cys Ser Phe Ala Ala Ala Ala Ala		
	225	230
Arg Arg Arg His Arg Ala Trp Gly Cys Arg Leu Lys Ala Cys Arg Thr		
	245	250
Ala Leu Pro Asn Leu Ala Pro Arg Arg Cys Arg Tyr Ala Val Arg		
	260	265
		270

<210> 129  
 <211> 815  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 129  
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 agcagcaggc gttgcgtgtc ttcgggcaga tgtgtgaacc aatattcgag cagggcggac 120  
 gcaattcctt ggcggcggca ttcgggcgcg gtggcaatca ggtgcagttc ggattcgtcg 180  
 ggcaggttct gccaaacgat aaaggcggca atcccgcgtc tttttccgca aggaaaacct 240  
 gttcggacgg cgaaaccagt gcggactcaa attggcggtg cgtccatgcg gacggggttg 300  
 agacggcatc gagtgcggcc agctcctcac aatcggcaca aacggcacgg cggatgttca 360  
 cgggcgcgct ctccgttcgg cctgttcttt ggcatcagg gcgattttgt tgcggacgta 420  
 gagcaaaccg gcgtgtgcgg catggacggc aggataaccg cccttggtg ccaatgcgag 480  
 aaagtcggcg gcagtcggca tatccggtct gcctgagaac ggcgagcgtt cttccagcgc 540  
 gaacgcgctg cctatgccgt ctgaaaaggc gcacccctcc ggcagccgga tgtctgccgc 600  
 ccgcccgaacc tgataatcgc tcaaaccggtg gcagttcagc gtatcgaacc atgcataaaa 660  
 cacttcgccc atacgagcgt ccgtagcggc aaggatgcag ctttgcggcg gcggcagcga 720  
 ggcgggcgga tcgagcgagg gtacgccgat taagggggta tcaaaccggc ttgccaacc 780  
 ctgagctaca ccgatgccga tacgcagtcg ggtaa 815

<210> 130  
 <211> 270  
 <212> PRT  
 <213> Neisseria meningitides

<220>

<221> UNSURE

<222> (73)

<223> Xaa is any amino acid

<400> 130

Met Leu Lys Pro Cys Ala Val Tyr Ser Ala Cys Ala Ala Val Leu Pro  
1 5 10 15

Ala Arg Thr Ser Ser Ser Arg Arg Cys Val Ser Ser Gly Arg Cys Val  
20 25 30

Asn Gln Tyr Ser Ser Arg Ala Asp Ala Ile Pro Trp Arg Arg His Ser  
35 40 45

Gly Ala Val Ala Ile Arg Cys Ser Ser Asp Ser Ser Gly Arg Phe Cys  
50 55 60

Gln Thr Ile Lys Ala Ala Ile Pro Xaa Ser Phe Ser Ala Arg Lys Thr  
65 70 75 80

Cys Ser Asp Gly Glu Thr Ser Ala Asp Ser Asn Trp Arg Cys Val His  
85 90 95

Ala Asp Gly Leu Gln Thr Ala Ser Ser Ala Ala Ser Ser Ser Gln Ser  
100 105 110

Ala Gln Thr Ala Arg Arg Met Phe Thr Gly Ala Leu Ser Val Arg Pro  
115 120 125

Val Leu Trp Gln Ser Gly Arg Phe Cys Cys Gly Arg Arg Ala Asn Arg  
130 135 140

Arg Val Arg His Gly Arg Gln Asp Asn Arg Pro Trp Leu Pro Met Arg  
145 150 155 160

Glu Ser Arg Arg Gln Ser Ala Tyr Pro Val Cys Leu Arg Thr Ala Glu  
165 170 175

Leu Leu Pro Ala Arg Thr Arg Cys Leu Cys Arg Leu Lys Arg Arg Ile  
180 185 190

Pro Pro Ala Ala Gly Cys Leu Pro Pro Ala Arg Pro Asp Asn Arg Ser  
195 200 205

Asn Gly Gly Ser Ser Ala Tyr Arg Thr Met His Lys Thr Leu Arg Pro  
210 215 220

Tyr Glu Arg Pro Arg Gln Gly Cys Ser Phe Ala Ala Ala Ala Arg  
225 230 235 240

Arg Arg His Arg Ala Arg Val Arg Arg Leu Arg Gly Tyr Gln Thr Ala  
245 250 255

Leu Pro Asn Pro Glu Leu His Arg Cys Arg Tyr Ala Val Arg  
260 265 270

<210> 131  
 <211> 816  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 131  
 atgctgaagc cgtgcgccgt gtacagtgcc tgtgcggcgg tgttgccctgc acggacttcg 60  
 agcagcaggc gttgcgtgtc ttcgggcaga tgtgtgaacc aatattcgag cagggcggac 120  
 gcaattcctt ggccggcgga ttcgggcgcg gtggcaatca ggtgcagttc ggattcgtcg 180  
 ggcaggttct gccaaacgat aaaggcggca atcccgccgt ctttttcgcg aaggaaaacc 240  
 tgttcggacg gcgaaaccag tgcggactca aattggcgtt gcgtccacgc ggacgggttg 300  
 cagacggcat cgagcgccgc gagtgcggcg caatcgcat aaacggcgcg gcggatgttc 360  
 acaggcgcg cctccgttcc gcctgttctt tggcagtcaa ggcgattttg ttgcggacgt 420  
 agagcagctc ggcggtgtgc gcagcgacgg cgggaaaacc gccttcagcc gccagattga 480  
 ggaagtcggc ggcggtcggc atatcgggtt tgcctgagaa gggcggacgg ttttcacgcg 540  
 cgaacgcatt gccgatgccg tctgaaaagg cgcctccttc cggcagccgg atgtctgccg 600  
 cccgaccgac ctgataatcg ctcaaaccgc ggcggttcag cgtgtcgaac catgcataaa 660  
 acacttcgcc catacgtgcg tccgcagcgg caaggatgca gctttgcggc ggccggcagc 720  
 aggcggcggc atcgagcgag ggtacgccga ttaaaggagt atcaaaccgc gttgccaaac 780  
 cttgcgccac gccgatgccg atacgcagtc ccgtaa 816

<210> 132  
 <211> 269  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 132  
 Met Leu Lys Pro Cys Ala Val Tyr Ser Ala Cys Ala Ala Val Leu Pro  
 1 5 10 15  
 Ala Arg Thr Ser Ser Ser Arg Arg Cys Val Ser Ser Gly Arg Cys Val  
 20 25 30  
 Asn Gln Tyr Ser Ser Arg Ala Asp Ala Ile Pro Trp Arg Arg His Ser  
 35 40 45  
 Gly Ala Val Ala Ile Arg Cys Ser Ser Asp Ser Ser Gly Arg Phe Cys  
 50 55 60  
 Gln Thr Ile Lys Ala Ala Ile Pro Pro Ser Phe Ser Ala Arg Lys Thr  
 65 70 75 80  
 Cys Ser Asp Gly Glu Thr Ser Ala Asp Ser Asn Trp Arg Cys Val His  
 85 90 95  
 Ala Asp Gly Leu Gln Thr Ala Ser Ser Ala Ala Ser Ala Ala Gln Ser  
 100 105 110  
 Ala Thr Ala Arg Arg Met Phe Thr Gly Ala Pro Ser Val Pro Pro Val  
 115 120 125  
 Leu Trp Gln Ser Arg Arg Phe Cys Cys Gly Arg Arg Ala Ala Arg Arg  
 130 135 140

Val Pro Gln Arg Arg Arg Glu Asn Arg Leu Gln Pro Pro Asp Gly Ser  
145 150 155 160

Arg Arg Arg Ser Ala Tyr Arg Val Cys Leu Arg Arg Ala Asp Gly Phe  
165 170 175

Pro Ala Arg Thr His Cys Arg Cys Arg Leu Lys Arg Arg Ile Leu Pro  
180 185 190

Ala Ala Gly Cys Leu Pro Pro Asp Arg Pro Asp Asn Arg Ser Asn Gly  
195 200 205

Gly Gly Ser Ala Cys Arg Thr Met His Lys Thr Leu Arg Pro Tyr Val  
210 215 220

Arg Pro Gln Arg Gln Gly Cys Ser Phe Ala Ala Ala Ala Arg Arg  
225 230 235 240

Arg His Arg Ala Arg Val Arg Arg Leu Lys Glu Tyr Gln Thr Ala Leu  
245 250 255

Pro Asn Leu Ala Pro Arg Arg Cys Arg Tyr Ala Val Pro  
260 265

<210> 133  
<211> 687  
<212> DNA  
<213> Neisseria meningitidis

<400> 133  
atgctgaagc cgtgcgcggt gtacagtgcc tgtgcggcgg tgttgccctgc acggacttcg 60  
agcagcaggc gttgcgtgtc ttcgggcaga tgtgtgaacc aatattcgag cagggcggac 120  
gcaattcctt ggcggcggca ttcgggcgcg gtggcaatca ggtgcagttc ggattcgtcg 180  
ggcaggttct gccaaacgat aaaggcggca atcccgccgt ctttttccgc aaggaaaacc 240  
tgttcggacg gcgaaaccag tgcggactca aattggcgtt gcgtccatgc ggacgggttg 300  
cagacggcat cgagtgcggc cagctcctca caatcggcac aaacggcacg gcgcatgttc 360  
acgggcgcgc tctccgttcg gcctgttctt tggcagtcag ggcgattttg ttgcggacgt 420  
agagcaaaccc ggcggtgtgcg gcatggacgg caggataacc gcccttggtt gccaatgcga 480  
gaaagtcggc ggcagtcggc atatccggtc tgctgagaa cggcggagct tcttcacgcg 540  
cgaacgcgct gcctatgccg tctgaaaagg cgcattccctc cggcagccgg atgtctgccg 600  
cccgcccgac ctgataatcg ctcaaacggt ggcagttcag cgtatcgaac catgcataaa 660  
aacttcgcc catacgagcg tccgtag 687

<210> 134  
<211> 228  
<212> PRT  
<213> Neisseria meningitidis

<400> 134  
Met Leu Lys Pro Cys Ala Val Tyr Ser Ala Cys Ala Ala Val Leu Pro  
1 5 10 15

Ala Arg Thr Ser Ser Ser Arg Arg Cys Val Ser Ser Gly Arg Cys Val  
20 25 30



Asn Gln Tyr Ser Ser Arg Ala Asp Ala Ile Pro Trp Arg Arg His Ser  
35 40 45

Gly Ala Val Ala Ile Arg Cys Ser Ser Asp Ser Ser Gly Arg Phe Cys  
50 55 60

Gln Thr Ile Lys Ala Ala Ile Pro Pro Ser Phe Ser Ala Arg Lys Thr  
65 70 75 80

Cys Ser Asp Gly Glu Thr Ser Ala Asp Ser Asn Trp Arg Cys Val His  
85 90 95

Ala Asp Gly Leu Gln Thr Ala Ser Ser Ala Ala Ser Ser Ser Gln Ser  
100 105 110

Ala Gln Thr Ala Arg Arg Met Phe Thr Gly Ala Leu Ser Val Arg Pro  
115 120 125

Val Leu Trp Gln Ser Gly Arg Phe Cys Cys Gly Arg Arg Ala Asn Arg  
130 135 140

Arg Val Arg His Gly Arg Gln Asp Asn Arg Pro Trp Leu Pro Met Arg  
145 150 155 160

Glu Ser Arg Arg Gln Ser Ala Tyr Pro Val Cys Leu Arg Thr Ala Glu  
165 170 175

Leu Leu Pro Ala Arg Thr Arg Cys Leu Cys Arg Leu Lys Arg Arg Ile  
180 185 190

Pro Pro Ala Ala Gly Cys Leu Pro Pro Ala Arg Pro Asp Asn Arg Ser  
195 200 205

Asn Gly Gly Ser Ser Ala Tyr Arg Thr Met His Lys Thr Leu Arg Pro  
210 215 220

Tyr Glu Arg Pro  
225

<210> 135

<211> 642

<212> DNA

<213> Neisseria gonorrhoeae

<400> 135

atgactgatt tccgccaaga tttcctcaaa ttctccctcg cccaaaatgt tttgaaattc 60  
ggcgaattta ccaccaaagc cggacggcgg tcgcctatt tcttcaatgc cggcctcttc 120  
aacgacggcg cgtccacgct gcaactggca aaattctatg cacaatccat cattgaaagc 180  
ggcatccgat tcgatatgct gttcggcccc gcctacaaag gcattatattt ggcggcggca 240  
accgcatga tgctggcgga aaaaggcgtg aacgtcccgt ttgcctacaa ccgcaaagaa 300  
gccaaagacc gcggcgaagg cggcgtgttg gtcggcgcgc cgcttaaagg gcgcgtgctg 360  
attatcgacg acgtgatttc cgccggcaca tccgtacgcg aatcaatcaa actgattgaa 420  
gcggagggtg caacccccgc cgggtgtcgc atcgcgctcg accgcatgga aaaaggcacg 480  
ggtaaattgt ccgccgttca ggaagtggaa aaacaatacg gcctgcccg cgccccatc 540  
gccagcctga acgatttggt tctctgttg caaaacaacc ccgaattcgg acagttcctc 600

gaacccgtcc gcacctaccg ccggcagtagc ggcgtagaat aa

642

<210> 136

<211> 213

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 136

Met Thr Asp Phe Arg Gln Asp Phe Leu Lys Phe Ser Leu Ala Gln Asn  
1 5 10 15

Val Leu Lys Phe Gly Glu Phe Thr Thr Lys Ala Gly Arg Arg Ser Pro  
20 25 30

Tyr Phe Phe Asn Ala Gly Leu Phe Asn Asp Gly Ala Ser Thr Leu Gln  
35 40 45

Leu Ala Lys Phe Tyr Ala Gln Ser Ile Ile Glu Ser Gly Ile Arg Phe  
50 55 60

Asp Met Leu Phe Gly Pro Ala Tyr Lys Gly Ile Ile Leu Ala Ala Ala  
65 70 75 80

Thr Ala Met Met Leu Ala Glu Lys Gly Val Asn Val Pro Phe Ala Tyr  
85 90 95

Asn Arg Lys Glu Ala Lys Asp Arg Gly Glu Gly Gly Val Leu Val Gly  
100 105 110

Ala Pro Leu Lys Gly Arg Val Leu Ile Ile Asp Asp Val Ile Ser Ala  
115 120 125

Gly Thr Ser Val Arg Glu Ser Ile Lys Leu Ile Glu Ala Glu Gly Ala  
130 135 140

Thr Pro Ala Gly Val Ala Ile Ala Leu Asp Arg Met Glu Lys Gly Thr  
145 150 155 160

Gly Lys Leu Ser Ala Val Gln Glu Val Glu Lys Gln Tyr Gly Leu Pro  
165 170 175

Val Ala Pro Ile Ala Ser Leu Asn Asp Leu Phe Ile Leu Leu Gln Asn  
180 185 190

Asn Pro Glu Phe Gly Gln Phe Leu Glu Pro Val Arg Thr Tyr Arg Arg  
195 200 205

Gln Tyr Gly Val Glu  
210

<210> 137

<211> 642

<212> DNA

<213> *Neisseria meningitidis*

<400> 137

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atgaccgatt tccgccaaga tttcctcaaa ttctccctcg cccaaaatgt tttgaaattc 60
ggcgaattta ccaccaaggc aggacggcgg tcgccctatt tcttcaatgc cggcctcttt 120
aacgacggct tgtccacgct gcaactggca aaattttacg cacaatccat cattgaaagc 180
ggcatccgat tcgatatgct gttcgggtccc gcctacaaag gcattatttt ggcgggcgga 240
accgcgatga tgctggcgga aaaaggcgtg aacgtcccgt ttgcctacaa ccgcaaagaa 300
gccaaagacc acggcgaagg cggcgtgttg gtcggcgcg cgttaaagg gcgcgtgctg 360
attatcgacg acgtgatttc cgcgggcaca tccgtacgag aatcgatcaa actgattgaa 420
gcggagggtg caacccccgc cgggtgtcgcc atcgcgctcg atcgcatgga aaaaggcacg 480
ggtgaattga gcgcggttca ggaagtggar aaacaatacg gkctgcccg cgcctccatc 540
gccagcctga acgatttggt tattctgttg caaaacaacc ccgaattcgg acagttcctc 600
gaaccctcc gagcctaccg tcggcagtac ggcgtagaat aa 642
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<210> 138

<211> 213

<212> PRT

<213> *Neisseria meningitidis*

<400> 138

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Met Thr Asp Phe Arg Gln Asp Phe Leu Lys Phe Ser Leu Ala Gln Asn
  1              5              10              15
```

```
Val Leu Lys Phe Gly Glu Phe Thr Thr Lys Ala Gly Arg Arg Ser Pro
      20              25              30
```

```
Tyr Phe Phe Asn Ala Gly Leu Phe Asn Asp Gly Leu Ser Thr Leu Gln
    35              40              45
```

```
Leu Ala Lys Phe Tyr Ala Gln Ser Ile Ile Glu Ser Gly Ile Arg Phe
    50              55              60
```

```
Asp Met Leu Phe Gly Pro Ala Tyr Lys Gly Ile Ile Leu Ala Ala Ala
    65              70              75              80
```

```
Thr Ala Met Met Leu Ala Glu Lys Gly Val Asn Val Pro Phe Ala Tyr
      85              90              95
```

```
Asn Arg Lys Glu Ala Lys Asp His Gly Glu Gly Gly Val Leu Val Gly
    100              105              110
```

```
Ala Pro Leu Lys Gly Arg Val Leu Ile Ile Asp Asp Val Ile Ser Ala
    115              120              125
```

```
Gly Thr Ser Val Arg Glu Ser Ile Lys Leu Ile Glu Ala Glu Gly Ala
    130              135              140
```

```
Thr Pro Ala Gly Val Ala Ile Ala Leu Asp Arg Met Glu Lys Gly Thr
    145              150              155              160
```

```
Gly Glu Leu Ser Ala Val Gln Glu Val Glu Lys Gln Tyr Gly Leu Pro
      165              170              175
```

```
Val Ala Pro Ile Ala Ser Leu Asn Asp Leu Phe Ile Leu Leu Gln Asn
    180              185              190
```

```
Asn Pro Glu Phe Gly Gln Phe Leu Glu Pro Val Arg Ala Tyr Arg Arg
```

195

200

205

Gln Tyr Gly Val Glu  
210

&lt;210&gt; 139

&lt;211&gt; 642

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 139

```

atgaccgatt tccgccaaga tttcctcaaa ttctccctcg cccaaaatgt tttgaaattc 60
ggcgaattca ccaccaaagc cggacggcgg tcgccctatt tcttcaatgc cggcctcttt 120
aacgacggct tgtccacgct gcaactggca aaattttacg cacaatccat cattgaaagc 180
ggcatccgat tcgatatgct gttcggcccc gcctacaaag gcattatattt ggcggcggca 240
accgcgatga tgctggcgga aaaaggcgtg aacgtcccgt ttgcctacaa ccgcaaagaa 300
gccaaagacc acggcgaagg cggcgtgttg gtccggcgcg cgcttaaagg gcgcgtgctg 360
attatcgacg acgtgatttc cgccggcaca tccgtacgcg aatcgatcaa actgattgaa 420
gcggaggggt caacccccgc cgggtgtcgcc atcgcgctcg accgcatgga aaaaggcacg 480
ggagaattga gcgcggttca ggaagtggaa aaacaatacg gcctgccgtg cgccccatc 540
gccagcctga acgatttggt tattctgttg caaaacaacc ccgaattcgg acagttcctc 600
gaaccgcgtc gagcctaccg tcggcagtag ggcgtagaat aa 642

```

&lt;210&gt; 140

&lt;211&gt; 213

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 140

```

Met Thr Asp Phe Arg Gln Asp Phe Leu Lys Phe Ser Leu Ala Gln Asn
 1              5              10              15

Val Leu Lys Phe Gly Glu Phe Thr Thr Lys Ala Gly Arg Arg Ser Pro
      20              25              30

Tyr Phe Phe Asn Ala Gly Leu Phe Asn Asp Gly Leu Ser Thr Leu Gln
      35              40              45

Leu Ala Lys Phe Tyr Ala Gln Ser Ile Ile Glu Ser Gly Ile Arg Phe
      50              55              60

Asp Met Leu Phe Gly Pro Ala Tyr Lys Gly Ile Ile Leu Ala Ala Ala
      65              70              75              80

Thr Ala Met Met Leu Ala Glu Lys Gly Val Asn Val Pro Phe Ala Tyr
      85              90              95

Asn Arg Lys Glu Ala Lys Asp His Gly Glu Gly Gly Val Leu Val Gly
      100              105              110

Ala Pro Leu Lys Gly Arg Val Leu Ile Ile Asp Asp Val Ile Ser Ala
      115              120              125

Gly Thr Ser Val Arg Glu Ser Ile Lys Leu Ile Glu Ala Glu Gly Ala
      130              135              140

```

Thr Pro Ala Gly Val Ala Ile Ala Leu Asp Arg Met Glu Lys Gly Thr  
145 150 155 160

Gly Glu Leu Ser Ala Val Gln Glu Val Glu Lys Gln Tyr Gly Leu Pro  
165 170 175

Val Ala Pro Ile Ala Ser Leu Asn Asp Leu Phe Ile Leu Leu Gln Asn  
180 185 190

Asn Pro Glu Phe Gly Gln Phe Leu Glu Pro Val Arg Ala Tyr Arg Arg  
195 200 205

Gln Tyr Gly Val Glu  
210

<210> 141  
<211> 492  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 141  
atgccgtccg aaccacctgc cgcttcagac ggcaccaaac cgacacacac cgagaaaaaca 60  
tcatgcccgc ctgtttctgt ccgcactgca aaacccgcct ctgggtcaaa gaaacccagc 120  
tcaacgtcgc ccaaggtctc gtcgtctgcc aaaaatgcga agggctgttt aaagccaaag 180  
accatctggc aagcacgaaa gaacctatat tcaacgattg gcccgagct gtttcgggat 240  
gtcaaaactcg tccaccgcat cggcacgcac gccattagca agaaacagat gtcccgcgac 300  
gaaatcgccg atatcctcaa cggcgggtaca accctgcacg atacgccgcc cgcaaccgcc 360  
gtgcccgcac ctgccgccgc accgcaggtt tccgtaccgc ccgcccgta ggaagggctc 420  
aactggacta ttgcaaccct gttcgacatt atcgtcctca ttatgcagct ttcctacctc 480  
ttcatcctat ga 492

<210> 142  
<211> 163  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 142  
Met Pro Ser Glu Pro Pro Ala Ala Ser Asp Gly Ile Lys Pro Thr His  
1 5 10 15  
Thr Glu Lys Thr Ser Cys Pro Pro Val Ser Val Arg Thr Ala Lys Pro  
20 25 30  
Ala Ser Gly Ser Lys Lys Pro Ser Ser Thr Ser Pro Lys Ala Ser Ser  
35 40 45  
Ser Ala Lys Asn Ala Lys Gly Cys Leu Lys Pro Lys Thr Ile Trp Gln  
50 55 60  
Ala Arg Lys Asn Leu Tyr Ser Thr Ile Gly Pro Lys Leu Phe Arg Asp  
65 70 75 80  
Val Lys Leu Val His Arg Ile Gly Thr His Ala Ile Ser Lys Lys Gln  
85 90 95

Met Ser Arg Asp Glu Ile Ala Asp Ile Leu Asn Gly Gly Thr Thr Leu  
100 105 110

His Asp Thr Pro Pro Ala Thr Ala Ala Ala Pro Ala Ala Ala Pro  
115 120 125

Gln Val Ser Val Pro Pro Ala Arg Gln Glu Gly Leu Asn Trp Thr Ile  
130 135 140

Ala Thr Leu Phe Ala Leu Ile Val Leu Ile Met Gln Leu Ser Tyr Leu  
145 150 155 160

Phe Ile Leu

<210> 143  
<211> 513  
<212> DNA  
<213> Neisseria meningitides

<220>  
<221> Misc. feature  
<222> (133)....(237)  
<223> N is any nucleotide

<400> 143  
atgccgtccg aaccgcctta cgcctcagac ggcacaaac ctgacacaca cgaggaaata 60  
ccatgcccgc ctgtttctgc cccactgca aaaccctct ctgggtcaaa gaaacccaac 120  
tcaatgtcgc cgnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 180  
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnccc 240  
gaggctgttt cggatgtcaa actcgttcac cgtatcggca cgcgcgccat cggcaagaaa 300  
cagatttccc gtgacgaaat cgcgcgcac ctcaacggcg gtacaacca gcccgatatt 360  
ccgcccgcga cgcgcgcac cctgctgcc gcaccgcagg ttaccgtacc gcccgccgcg 420  
cccgccgctc aggatgggtt caactggacg attgcaaccc tgtttgccct tatcgtcctc 480  
attatgcagc tttctacct cgtcatccta tga 513

<210> 144  
<211> 170  
<212> PRT  
<213> Neisseria meningitides

<220>  
<221> UNSURE  
<222> (45)....(79)  
<223> Xaa is any amino acid

<400> 144  
Met Pro Ser Glu Pro Pro Tyr Ala Ser Asp Gly Ile Lys Pro Asp Thr  
1 5 10 15

His Glu Glu Ile Pro Cys Pro Pro Val Ser Ala Pro Thr Ala Lys Pro  
20 25 30

Val Ser Gly Ser Lys Lys Pro Asn Ser Met Ser Pro Xaa Xaa Xaa Xaa

35	40	45
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa		
50	55	60
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Pro		
65	70	75 80
Glu Ala Val Ser Asp Val Lys Leu Val His Arg Ile Gly Thr Arg Ala		
85	90	95
Ile Gly Lys Lys Gln Ile Ser Arg Asp Glu Ile Ala Gly Ile Leu Asn		
100	105	110
Gly Gly Thr Thr Gln Pro Asp Ile Pro Pro Ala Thr Ala Ala Thr Pro		
115	120	125
Ala Ala Ala Pro Gln Val Thr Val Pro Pro Ala Ala Pro Ala Arg Gln		
130	135	140
Asp Gly Phe Asn Trp Thr Ile Ala Thr Leu Phe Ala Leu Ile Val Leu		
145	150	155 160
Ile Met Gln Leu Ser Tyr Leu Val Ile Leu		
165	170	

<210> 145  
 <211> 497  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 145  
 atgccgtctg aaccgcctta cgcctcagac ggcacaaac ctgacacaca cgaggaaata 60  
 ccatgcccg cgtgttctgc cccactgca aaaccgtct ctgggtcaaa gaaaccaaac 120  
 tcaatgtcgc ccaaggcttc gtcgtctgcc aaaaatgcga aggaatgttt aaagccaaag 180  
 accatctggc aagcacgaaa gaaccatata tcaacgattt gccgaagct gtttcggatg 240  
 tcaaactcgt tcaccgcata ggcacgagcg ccatcggaac gaaacagatt tcccgtgacg 300  
 aaatcgccgg catcctcaac ggcggcacaa ccagcccgga tattccgccc gcaaccgccc 360  
 ccaccctgc tgccgcaccg caggttaccg taccgcccgc cgcgcccgc cgtcaggatg 420  
 ggttcaactg gacgattgca accctgtttg cccttatcgt cctcattatg cagctttcct 480  
 acctcgtcat cctatga 497

<210> 146  
 <211> 165  
 <212> PRT  
 <213> Neisseria meningitides

<220>  
 <221> UNSURE  
 <222> (74)  
 <223> Xaa is any amino acid

<400> 146  
 Met Pro Ser Glu Pro Pro Tyr Ala Ser Asp Gly Ile Lys Pro Asp Thr  
 1 5 10 15

His Glu Glu Ile Pro Cys Pro Pro Val Ser Ala Pro Thr Ala Lys Pro  
 20 25 30

Val Ser Gly Ser Lys Lys Pro Asn Ser Met Ser Pro Lys Ala Ser Ser  
 35 40 45

Ser Ala Lys Asn Ala Lys Glu Cys Leu Lys Pro Lys Thr Ile Trp Gln  
 50 55 60

Ala Arg Lys Asn Pro Tyr Ser Thr Ile Xaa Pro Glu Ala Val Ser Asp  
 65 70 75 80

Val Lys Leu Val His Arg Ile Gly Thr Ser Ala Ile Gly Lys Lys Gln  
 85 90 95

Ile Ser Arg Asp Glu Ile Ala Gly Ile Leu Asn Gly Gly Thr Thr Gln  
 100 105 110

Pro Asp Ile Pro Pro Ala Thr Ala Ala Thr Pro Ala Ala Ala Pro Gln  
 115 120 125

Val Thr Val Pro Pro Ala Ala Pro Ala Arg Gln Asp Gly Phe Asn Trp  
 130 135 140

Thr Ile Ala Thr Leu Phe Ala Leu Ile Val Leu Ile Met Gln Leu Ser  
 145 150 155 160

Tyr Leu Val Ile Leu  
 165

<210> 147

<211> 1311

<212> DNA

<213> Neisseria gonorrhoeae

<400> 147

atgaacgcgc ccgacagctt tgtcgcccac ttccgcgaag ccgcccccta catccgcca 60  
 atgcgcggca cgacactggt cgcgggcata gacggccgcc tgctcgaagg cggcacctta 120  
 aataagctcg ccgccgacat cgggctgttg tcgcaactgg gcatccgact cgtcctcatc 180  
 cacggcgcgt accacttcct cgaccgcctc gccgcgcgc aaggccgcac gccgcattat 240  
 tgccgggggtt tgcgcgttac cgacgaaacc tcgctcggac aggcgcagca gtttgccggc 300  
 accgtccgca gccgttttga agccgcattg tgcggcagcg tttcaggatt cgcgcgcgcg 360  
 ccttcctgcc cgtcgttata gggcaacttc ctgaccgccc gtccgatggg cgtgattgac 420  
 ggaaccgata tggaatacgc gggggttatc cgaaaaccg acaccgccgc cctccgtttc 480  
 caactcgacg cgggaatat cgtctggatg ccgccgctcg ggcattccta cggcggcaaa 540  
 accttcaatc tcgatatggt gcaggccgcc gcttcctcg cgtctcgcgt tcaggccgaa 600  
 aaactcgttt acctgacctt ttcagacggc atttcccgcc ccgacggcac gctcgcgcaa 660  
 accctctcgg cacaggaagc gcaatcgctg gcggaacacg ccgccagcga aaccgcacga 720  
 ctgatttcgt ccgcggttgc cgcgctcgaa ggcgcggtgc atcgcgctcca aatcctcaac 780  
 ggggcgcgcg acggcagcct gctgcaagaa ctcttcaccc gcaacggcat cggcacgtcc 840  
 attgcaaag aagccttcgt ctccatccgg caggcgcaca gcggcgacat cccgcacatc 900  
 gccgccctca tccgcccgtc ggaagaacag ggcgctcctat tgcaccgcag ccgcgaatac 960  
 ctcgaaaacc acatttcoga attttccatc ctcgaaacacg acggcgacct gtacggctgt 1020  
 gccgcactca aaacctttgc cgaagccgat tgcggcgaaa tcgcctgcct tgccgtctcg 1080  
 ccgcaggcac aggcgcggcg ctacggcgaa cgctgtcttg cccacattat cgataaggcg 1140



cgcgcatag gcataagcag gctgttcgca ctgtccacaa ataccggcga atggtttgcc 1200  
gaacgcggct ttcagacggc atcggaagac gagctgcccg aaacgcggcg caaagactac 1260  
cgcagcaacg gacgaaacc gcatattctg gtgcgtcgcc tgcaccgctg a 1311

<210> 148  
<211> 436  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 148  
Met Asn Ala Pro Asp Ser Phe Val Ala His Phe Arg Glu Ala Ala Pro  
1 5 10 15  
Tyr Ile Arg Gln Met Arg Gly Thr Thr Leu Val Ala Gly Ile Asp Gly  
20 25 30  
Arg Leu Leu Glu Gly Gly Thr Leu Asn Lys Leu Ala Ala Asp Ile Gly  
35 40 45  
Leu Leu Ser Gln Leu Gly Ile Arg Leu Val Leu Ile His Gly Ala Tyr  
50 55 60  
His Phe Leu Asp Arg Leu Ala Ala Ala Gln Gly Arg Thr Pro His Tyr  
65 70 75 80  
Cys Arg Gly Leu Arg Val Thr Asp Glu Thr Ser Leu Gly Gln Ala Gln  
85 90 95  
Gln Phe Ala Gly Thr Val Arg Ser Arg Phe Glu Ala Ala Leu Cys Gly  
100 105 110  
Ser Val Ser Gly Phe Ala Arg Ala Pro Ser Val Pro Leu Val Ser Gly  
115 120 125  
Asn Phe Leu Thr Ala Arg Pro Met Gly Val Ile Asp Gly Thr Asp Met  
130 135 140  
Glu Tyr Ala Gly Val Ile Arg Lys Thr Asp Thr Ala Ala Leu Arg Phe  
145 150 155 160  
Gln Leu Asp Ala Gly Asn Ile Val Trp Met Pro Pro Leu Gly His Ser  
165 170 175  
Tyr Gly Gly Lys Thr Phe Asn Leu Asp Met Val Gln Ala Ala Ala Ser  
180 185 190  
Val Ala Val Ser Leu Gln Ala Glu Lys Leu Val Tyr Leu Thr Leu Ser  
195 200 205  
Asp Gly Ile Ser Arg Pro Asp Gly Thr Leu Ala Glu Thr Leu Ser Ala  
210 215 220  
Gln Glu Ala Gln Ser Leu Ala Glu His Ala Ala Ser Glu Thr Arg Arg  
225 230 235 240  
Leu Ile Ser Ser Ala Val Ala Ala Leu Glu Gly Gly Val His Arg Val

245								250				255			
Gln	Ile	Leu	Asn	Gly	Ala	Ala	Asp	Gly	Ser	Leu	Leu	Gln	Glu	Leu	Phe
			260							265			270		
Thr	Arg	Asn	Gly	Ile	Gly	Thr	Ser	Ile	Ala	Lys	Glu	Ala	Phe	Val	Ser
		275					280					285			
Ile	Arg	Gln	Ala	His	Ser	Gly	Asp	Ile	Pro	His	Ile	Ala	Ala	Leu	Ile
	290					295					300				
Arg	Pro	Leu	Glu	Glu	Gln	Gly	Val	Leu	Leu	His	Arg	Ser	Arg	Glu	Tyr
305					310					315				320	
Leu	Glu	Asn	His	Ile	Ser	Glu	Phe	Ser	Ile	Leu	Glu	His	Asp	Gly	Asp
			325						330					335	
Leu	Tyr	Gly	Cys	Ala	Ala	Leu	Lys	Thr	Phe	Ala	Glu	Ala	Asp	Cys	Gly
			340						345				350		
Glu	Ile	Ala	Cys	Leu	Ala	Val	Ser	Pro	Gln	Ala	Gln	Asp	Gly	Gly	Tyr
	355						360					365			
Gly	Glu	Arg	Leu	Leu	Ala	His	Ile	Ile	Asp	Lys	Ala	Arg	Gly	Ile	Gly
	370					375					380				
Ile	Ser	Arg	Leu	Phe	Ala	Leu	Ser	Thr	Asn	Thr	Gly	Glu	Trp	Phe	Ala
385					390					395					400
Glu	Arg	Gly	Phe	Gln	Thr	Ala	Ser	Glu	Asp	Glu	Leu	Pro	Glu	Thr	Arg
			405						410					415	
Arg	Lys	Asp	Tyr	Arg	Ser	Asn	Gly	Arg	Asn	Pro	His	Ile	Leu	Val	Arg
		420							425				430		
Arg	Leu	His	Arg												
		435													

<210> 149  
 <211> 1236  
 <212> DNA  
 <213> Neisseria meningitides

<220>  
 <221> Misc. feature  
 <222> (1039)  
 <223> N is any nucleotide

<400> 149  
 atgagcgcgc ccgacctctt tgtcgccac ttccgcgaag ccgtccccta catccgccaa 60  
 atgcgcggca aaacgctggt cgccggcata gacgaccgcc tgctcgaagg tgatacctta 120  
 aacaagctcg ccgcgcacat cgggctgttg tcgcaactgg gcatcaggct cgtcctcatc 180  
 cacggcgcgc gccacttctt cgaccgccac gccgccgctc aaggccgcac gccgcattat 240  
 tgccggggct tgcgcgttac cgacgaaacc tcgctcgaac aggcgcagca gtttgccggc 300  
 accgtccgca gccgttttga agccgcattg tgcggcagcg ttccggggtt cgcgcgcgcg 360  
 ccttccgtcc cgctcgtatc gggcaacttc ctgaccgccc gtccgatagg tgtgattgac 420

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ggaaccgata tgggaatacgc gggcggttata cgcaaaaccg acaccgcgc cctccgtttc 480
caactcgacg cgggcaatat cgtctggctg ccgccgctcg gacattocta cagcggcaag 540
accttctatc tcgatatgct tcaaaccgcc gcctccgccg ccgtctcgct tcaggccgaa 600
aaactcgttt acctgacctt ttcagacggc atttccgcc ccgacggcac gctcgccgaa 660
accctctcgg cacaggaagc gcaatcgctg gcggaacacg ccggcgggca aacgcgacgg 720
ctgatttcgt ccgccgaact cttcaccgcg aacggcatcg gcacgtccat tgccaaagaa 780
gccttcgtct ccatccggca rgcgaywgg gcgacatccc gcacatcgcc gccctcatcc 840
gcccgcctgga agaacagggc atcctgctgc accgcascgc gaatacctcg aaaaccacat 900
ttccgaattt tccatcctcg aacacgacgg caacctgtac ggttgcgcg ccctgaaaac 960
ctttgccgaa gccgattgag gcgaaatcgc ctgccttgcc gtctcgccgc agcacaggac 1020
ggcggctacg gcgaacgcnt gcttgcccac attatcgata aggcgcgcgg cataggcata 1080
agcaggctgt tcgcactgtc cacaataacc ggcgaatggt ttgccgaacg cggctttcag 1140
acggcatcgg aagacgagtt gcccgaaacg cggcgcaaag actaccgcag caacggacgg 1200
aactcgcata ttctggtacg tcgcctgcac cgctga 1236

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<210> 150
<211> 412
<212> PRT
<213> Neisseria meningitides

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<220>
<221> UNSURE
<222> (270)....(271)
<223> Xaa is any amino acid

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<220>
<221> UNSURE
<222> (293)
<223> Xaa is any amino acid

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<220>
<221> UNSURE
<222> (339)
<223> Xaa is any amino acid

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<220>
<221> UNSURE
<222> (348)
<223> Xaa is any amino acid

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<400> 150
Met Ser Ala Pro Asp Leu Phe Val Ala His Phe Arg Glu Ala Val Pro
 1           5           10          15
Tyr Ile Arg Gln Met Arg Gly Lys Thr Leu Val Ala Gly Ile Asp Asp
 20          25          30
Arg Leu Leu Glu Gly Asp Thr Leu Asn Lys Leu Ala Ala Asp Ile Gly
 35          40          45
Leu Leu Ser Gln Leu Gly Ile Arg Leu Val Leu Ile His Gly Ala Arg
 50          55          60
His Phe Leu Asp Arg His Ala Ala Ala Gln Gly Arg Thr Pro His Tyr
 65          70          75          80

```

Cys	Arg	Gly	Leu	Arg	Val	Thr	Asp	Glu	Thr	Ser	Leu	Glu	Gln	Ala	Gln		
				85						90						95	
Gln	Phe	Ala	Gly	Thr	Val	Arg	Ser	Arg	Phe	Glu	Ala	Ala	Leu	Cys	Gly		
			100						105						110		
Ser	Val	Ser	Gly	Phe	Ala	Arg	Ala	Pro	Ser	Val	Pro	Leu	Val	Ser	Gly		
		115						120						125			
Asn	Phe	Leu	Thr	Ala	Arg	Pro	Ile	Gly	Val	Ile	Asp	Gly	Thr	Asp	Met		
		130						135						140			
Glu	Tyr	Ala	Gly	Val	Ile	Arg	Lys	Thr	Asp	Thr	Ala	Ala	Leu	Arg	Phe		
145						150						155					
Gln	Leu	Asp	Ala	Gly	Asn	Ile	Val	Trp	Leu	Pro	Pro	Leu	Gly	His	Ser		
			165						170						175		
Tyr	Ser	Gly	Lys	Thr	Phe	Tyr	Leu	Asp	Met	Leu	Gln	Thr	Ala	Ala	Ser		
			180						185						190		
Ala	Ala	Val	Ser	Leu	Gln	Ala	Glu	Lys	Leu	Val	Tyr	Leu	Thr	Leu	Ser		
		195						200						205			
Asp	Gly	Ile	Ser	Arg	Pro	Asp	Gly	Thr	Leu	Ala	Glu	Thr	Leu	Ser	Ala		
210						215						220					
Gln	Glu	Ala	Gln	Ser	Leu	Ala	Glu	His	Ala	Gly	Gly	Gln	Thr	Arg	Arg		
225						230						235					
Leu	Ile	Ser	Ser	Ala	Glu	Leu	Phe	Thr	Arg	Asn	Gly	Ile	Gly	Thr	Ser		
			245						250						255		
Ile	Ala	Lys	Glu	Ala	Phe	Val	Ser	Ile	Arg	Gln	Ala	His	Xaa	Xaa	Asp		
			260						265						270		
Ile	Pro	His	Ile	Ala	Ala	Leu	Ile	Arg	Pro	Leu	Glu	Glu	Gln	Gly	Ile		
275						280						285					
Leu	Leu	His	Arg	Xaa	Arg	Glu	Tyr	Leu	Glu	Asn	His	Ile	Ser	Glu	Phe		
290						295						300					
Ser	Ile	Leu	Glu	His	Asp	Gly	Asn	Leu	Tyr	Gly	Cys	Ala	Ala	Leu	Lys		
305						310						315					
Thr	Phe	Ala	Glu	Ala	Asp	Cys	Gly	Glu	Ile	Ala	Cys	Leu	Ala	Val	Ser		
			325						330						335		
Pro	Gln	Xaa	Gln	Asp	Gly	Gly	Tyr	Gly	Glu	Arg	Xaa	Leu	Ala	His	Ile		
			340						345						350		
Ile	Asp	Lys	Ala	Arg	Gly	Ile	Gly	Ile	Ser	Arg	Leu	Phe	Ala	Leu	Ser		
355						360						365					
Thr	Asn	Thr	Gly	Glu	Trp	Phe	Ala	Glu	Arg	Gly	Phe	Gln	Thr	Ala	Ser		
370						375						380					

Glu Asp Glu Leu Pro Glu Thr Arg Arg Lys Asp Tyr Arg Ser Asn Gly  
 385 390 395 400

Arg Asn Ser His Ile Leu Val Arg Arg Leu His Arg  
 405 410

<210> 151  
 <211> 1311  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 151  
 atgatcgtgc ccgacctctt tgtcgcccac ttccgcgaag ccgcccccta catccgcca 60  
 atgcgcggca aaacgctggt cgccggcata gacgaccgcc tgctcgaagg tgatacctta 120  
 aacaagttcg ccgccgacat cgggcttttg tcgcaactgg gcatcaggct cgtcctcatc 180  
 cagggcgcgc gccacttcct cgaccgccac gccgcgcgc aaggccgcac gccgcattat 240  
 tgccggggct tgcgcgttac cgacgaaacc tcgctcgaac aggcgcagca gtttgccggc 300  
 accgtccgca gccgttttga agccgcattg tcgggcagcg tttccgggtt cgcgcgcgcg 360  
 ccttcctgac cgctcgatc gggcaacttc ctgaccgcc gtccgatagg tgtgattgac 420  
 ggaaccgata tggaatacgc gggcgttatc cgcaaaacgc acaccgccgc cctccgtttc 480  
 caactcgacg cgggcaatat cgtctggctg ccgccgctcg gacattccta cagcggcaag 540  
 accttccatc tcgatatgct tcaaaccgcc gcctccgctg ccgtctcgct tcaggccgaa 600  
 aaactcgttt acctgacctt ttcagacggc atttccgcc ccgacggcac gctcgccgta 660  
 accctctcgg cacaggaagc gcaatcgctg gcggaacacg ccggcggcga aacgcgacgg 720  
 ctgatttcgt ccgccgttgc cgcgctcgaa ggcgcgctgc atcgcgctca aatcctcaac 780  
 ggagccgccg acggcagcct gctgcaagaa ctcttcaccc gcaacggcat cggcacgtcc 840  
 attgccaagg aagccttcgt ctccatccgg caggcgcaca gcggcgacat cccgcacatt 900  
 gccgccctca tccgcccgct ggaagaacag ggcatcctgc tgcaccgcag ccgcgaatac 960  
 ctgaaaaacc acatttccga attttccatc ctcgaaacag acggcaacct gtacggttgc 1020  
 gccgcctga aaacctttgc cgaagccgat tgcggcgaaa tcgcctgcct tgccgtctcg 1080  
 ccgcaggcac aggcggcgcg ctacggcgaa cgctgcttg ccacattat cgataaggcg 1140  
 cgcggcatag gcataagcag gctgttcgca ctgtccacaa ataccggcga atggtttgcc 1200  
 gaacgcggct ttcagacggc atcggaagac gagttgcccg aaacgcggcg caaagactac 1260  
 cgcagcaacg gacggaactc gcatattctg gtgcgctgcc tgcaccgctg a 1311

<210> 152  
 <211> 436  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 152  
 Met Ile Val Pro Asp Leu Phe Val Ala His Phe Arg Glu Ala Ala Pro  
 1 5 10 15  
 Tyr Ile Arg Gln Met Arg Gly Lys Thr Leu Val Ala Gly Ile Asp Asp  
 20 25 30  
 Arg Leu Leu Glu Gly Asp Thr Leu Asn Lys Phe Ala Ala Asp Ile Gly  
 35 40 45  
 Leu Leu Ser Gln Leu Gly Ile Arg Leu Val Leu Ile His Gly Ala Arg  
 50 55 60  
 His Phe Leu Asp Arg His Ala Ala Ala Gln Gly Arg Thr Pro His Tyr  
 65 70 75 80

Cys	Arg	Gly	Leu	Arg	Val	Thr	Asp	Glu	Thr	Ser	Leu	Glu	Gln	Ala	Gln				
				85							90							95	
Gln	Phe	Ala	Gly	Thr	Val	Arg	Ser	Arg	Phe	Glu	Ala	Ala	Leu	Cys	Gly				
			100						105								110		
Ser	Val	Ser	Gly	Phe	Ala	Arg	Ala	Pro	Ser	Val	Pro	Leu	Val	Ser	Gly				
		115						120								125			
Asn	Phe	Leu	Thr	Ala	Arg	Pro	Ile	Gly	Val	Ile	Asp	Gly	Thr	Asp	Met				
		130						135								140			
Glu	Tyr	Ala	Gly	Val	Ile	Arg	Lys	Thr	Asp	Thr	Ala	Ala	Leu	Arg	Phe				
145						150								155		160			
Gln	Leu	Asp	Ala	Gly	Asn	Ile	Val	Trp	Leu	Pro	Pro	Leu	Gly	His	Ser				
			165						170								175		
Tyr	Ser	Gly	Lys	Thr	Phe	His	Leu	Asp	Met	Leu	Gln	Thr	Ala	Ala	Ser				
			180						185								190		
Val	Ala	Val	Ser	Leu	Gln	Ala	Glu	Lys	Leu	Val	Tyr	Leu	Thr	Leu	Ser				
		195						200								205			
Asp	Gly	Ile	Ser	Arg	Pro	Asp	Gly	Thr	Leu	Ala	Val	Thr	Leu	Ser	Ala				
210						215								220					
Gln	Glu	Ala	Gln	Ser	Leu	Ala	Glu	His	Ala	Gly	Gly	Glu	Thr	Arg	Arg				
225						230								235		240			
Leu	Ile	Ser	Ser	Ala	Val	Ala	Ala	Leu	Glu	Gly	Gly	Val	His	Arg	Val				
			245						250								255		
Gln	Ile	Leu	Asn	Gly	Ala	Ala	Asp	Gly	Ser	Leu	Leu	Gln	Glu	Leu	Phe				
			260						265								270		
Thr	Arg	Asn	Gly	Ile	Gly	Thr	Ser	Ile	Ala	Lys	Glu	Ala	Phe	Val	Ser				
		275						280								285			
Ile	Arg	Gln	Ala	His	Ser	Gly	Asp	Ile	Pro	His	Ile	Ala	Ala	Leu	Ile				
290						295								300					
Arg	Pro	Leu	Glu	Glu	Gln	Gly	Ile	Leu	Leu	His	Arg	Ser	Arg	Glu	Tyr				
305						310								315		320			
Leu	Glu	Asn	His	Ile	Ser	Glu	Phe	Ser	Ile	Leu	Glu	His	Asp	Gly	Asn				
			325						330								335		
Leu	Tyr	Gly	Cys	Ala	Ala	Leu	Lys	Thr	Phe	Ala	Glu	Ala	Asp	Cys	Gly				
			340						345								350		
Glu	Ile	Ala	Cys	Leu	Ala	Val	Ser	Pro	Gln	Ala	Gln	Asp	Gly	Gly	Tyr				
355						360								365					
Gly	Glu	Arg	Leu	Leu	Ala	His	Ile	Ile	Asp	Lys	Ala	Arg	Gly	Ile	Gly				
370						375								380					

Ile Ser Arg Leu Phe Ala Leu Ser Thr Asn Thr Gly Glu Trp Phe Ala  
385 390 395 400

Glu Arg Gly Phe Gln Thr Ala Ser Glu Asp Glu Leu Pro Glu Thr Arg  
405 410 415

Arg Lys Asp Tyr Arg Ser Asn Gly Arg Asn Ser His Ile Leu Val Arg  
420 425 430

Arg Leu His Arg  
435

<210> 153

<211> 465

<212> DNA

<213> Neisseria gonorrhoeae

<400> 153

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gccgccttcg tgcgcgaacc gcaaagcatc ggtgcgctgg tgtgcgaagt accgctgacc 120  
gatatgatcc gttatccgct gctgtccgcc ggttcaagtt ggacggacga atacggcaat 180  
ccgcagaaat acgaagcctg caaacgccgg ctgggcgaat tgtcgccgta tcacaatctt 240  
tcagacggca tcgattatcc gccgcactc attaccacca gcctcagcga cgaccgcgtc 300  
catcccgcgc acgcgctcaa attctacgcc aaactgcgcg aaacctcgcc gcaatcttgg 360  
ctctactcgc ctgacggcgg cggccatacc ggcaacggca cccaacgcga atccgccgac 420  
aaactcgctt gcgtgttgct gtttttgaaa gaatttttgg gataa 465

<210> 154

<211> 154

<212> PRT

<213> Neisseria gonorrhoeae

<400> 154

Met Ser Ser Pro Lys His Ile Gly Leu Gln Gly Gly Ser Asn Gly Gly  
1 5 10 15

Leu Ile Thr Ala Ala Ala Phe Val Arg Glu Pro Gln Ser Ile Gly Ala  
20 25 30

Leu Val Cys Glu Val Pro Leu Thr Asp Met Ile Arg Tyr Pro Leu Leu  
35 40 45

Ser Ala Gly Ser Ser Trp Thr Asp Glu Tyr Gly Asn Pro Gln Lys Tyr  
50 55 60

Glu Ala Cys Lys Arg Arg Leu Gly Glu Leu Ser Pro Tyr His Asn Leu  
65 70 75 80

Ser Asp Gly Ile Asp Tyr Pro Pro Ala Leu Ile Thr Thr Ser Leu Ser  
85 90 95

Asp Asp Arg Val His Pro Ala His Ala Leu Lys Phe Tyr Ala Lys Leu  
100 105 110

Arg Glu Thr Ser Pro Gln Ser Trp Leu Tyr Ser Pro Asp Gly Gly Gly  
115 120 125

His Thr Gly Asn Gly Thr Gln Arg Glu Ser Ala Asp Lys Leu Ala Cys  
130 135 140

Val Leu Leu Phe Leu Lys Glu Phe Leu Gly  
145 150

<210> 155

<211> 465

<212> DNA

<213> Neisseria meningitidis

<400> 155

atcagttcgc ccgaacacat cggcttgcag ggcggcagca acggcggact gattactgcc 60  
gccgccttcg tgcgcgaacc gcaaagcatc ggcgcgctgg tgtgcgaagt gccgctgacc 120  
gacatgatcc gttatccgct gctctccgcc ggttcaagct ggacagacga atacggcaat 180  
ccgcaaaaat acgaagtctg caaacgccgg ttgggcgaat tgcgccgta tcacaatctt 240  
tcagacggca tcgattatcc gccgcgctc attaccacca gcctgtccga cgatcgcgtc 300  
catcccgccc acgcgctcaa gttctacgcc aaactgcgcg aaacctccgc gcaatcttgg 360  
ctctactcgc ctgacggcgg cggccatacc ggcaacggca cccaacgcga atccgccgac 420  
gaactcgctt gcgtcttgct gtttttgaaa gagtttttgg gctaa 465

<210> 156

<211> 154

<212> PRT

<213> Neisseria meningitidis

<400> 156

Ile Ser Ser Pro Glu His Ile Gly Leu Gln Gly Gly Ser Asn Gly Gly  
1 5 10 15  
Leu Ile Thr Ala Ala Ala Phe Val Arg Glu Pro Gln Ser Ile Gly Ala  
20 25 30  
Leu Val Cys Glu Val Pro Leu Thr Asp Met Ile Arg Tyr Pro Leu Leu  
35 40 45  
Ser Ala Gly Ser Ser Trp Thr Asp Glu Tyr Gly Asn Pro Gln Lys Tyr  
50 55 60  
Glu Val Cys Lys Arg Arg Leu Gly Glu Leu Ser Pro Tyr His Asn Leu  
65 70 75 80  
Ser Asp Gly Ile Asp Tyr Pro Pro Ala Leu Ile Thr Thr Ser Leu Ser  
85 90 95  
Asp Asp Arg Val His Pro Ala His Ala Leu Lys Phe Tyr Ala Lys Leu  
100 105 110  
Arg Glu Thr Ser Ala Gln Ser Trp Leu Tyr Ser Pro Asp Gly Gly Gly  
115 120 125  
His Thr Gly Asn Gly Thr Gln Arg Glu Ser Ala Asp Glu Leu Ala Cys



130 135 140

Val Leu Leu Phe Leu Lys Glu Phe Leu Gly  
145 150

<210> 157  
<211> 465  
<212> DNA  
<213> Neisseria meningitidis

<400> 157  
atcagttcgc ccgaacacat cggcttgcag ggcggcagca acggcggact gattactgcc 60  
gccgccttcg tgcgcgaacc gcaaagcata ggcgcgctgg tgtgcgaagt gccgctgacc 120  
gacatgatcc gttatccgct gctctccgcc ggttcaagct ggacagacga atacggcaat 180  
ccgcaaaaat acgaagtctg caaacgccgg ttgggcgaat tgtcgcgta tcacaatctt 240  
tcagacggca tcgattatcc gcccgcgctc attaccacca gcctgtccga cgatcgcgtc 300  
catcccgccc acgcgctcaa gttctacgcc aaactgcgcg aaacctcgcc gcaatcttgg 360  
ctctactcgc ctgacggcgg cggccatacc ggcaacggca cgcagcgcga agccgccgac 420  
gaactcgcct gcgtgttgct gtttttgaag gagtttttgg gctaa 465

<210> 158  
<211> 154  
<212> PRT  
<213> Neisseria meningitidis

<400> 158  
Ile Ser Ser Pro Glu His Ile Gly Leu Gln Gly Gly Ser Asn Gly Gly  
1 5 10 15  
Leu Ile Thr Ala Ala Ala Phe Val Arg Glu Pro Gln Ser Ile Gly Ala  
20 25 30  
Leu Val Cys Glu Val Pro Leu Thr Asp Met Ile Arg Tyr Pro Leu Leu  
35 40 45  
Ser Ala Gly Ser Ser Trp Thr Asp Glu Tyr Gly Asn Pro Gln Lys Tyr  
50 55 60  
Glu Val Cys Lys Arg Arg Leu Gly Glu Leu Ser Pro Tyr His Asn Leu  
65 70 75 80  
Ser Asp Gly Ile Asp Tyr Pro Pro Ala Leu Ile Thr Thr Ser Leu Ser  
85 90 95  
Asp Asp Arg Val His Pro Ala His Ala Leu Lys Phe Tyr Ala Lys Leu  
100 105 110  
Arg Glu Thr Ser Pro Gln Ser Trp Leu Tyr Ser Pro Asp Gly Gly Gly  
115 120 125  
His Thr Gly Asn Gly Thr Gln Arg Glu Ala Ala Asp Glu Leu Ala Cys  
130 135 140  
Val Leu Leu Phe Leu Lys Glu Phe Leu Gly

<210> 159  
 <211> 2016  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 159  
 atgaaatcct accccgaccc ctaccgccat tttgaaaacc tcgattccgc cgaaacgcaa 60  
 aacttcgctg ctgaagcgaa tgccgaaacg cgcgcgcgtt ttttaaaca cgaacaggcg 120  
 cgcgcacttt cagacggcat tttgaatcaa atgcaggaca cgcgcgcgat tccgttttgt 180  
 caggaacacc gcgcgcgat gtaccatttc catcagaatg cggaatatcc gaagggcgtg 240  
 taccgcatgt gtacggcggc gacctaccgt tccggctatc ccgagtggaa aatcctgttt 300  
 tcggtggcgg atttcgatga gttgctcggc gacgatgtgt atttggcggc cgtgtcgcac 360  
 ttggtggagc agcccaaccg cgcgctgctg actttgaaca aatcgggcgg cgatacggcg 420  
 tatacgctgg aagtggattt ggaagcaggg gaattggtag agggcggttt tcactttccg 480  
 gcaggcaaaa accatgtgtc gtggcgcgat gaaaacagcg tgtgggtgtg tccggcttgg 540  
 gacgaacgcc agttgaccga atcgggctat ccgcgcgaag tgtggcttgt ggaacgcggc 600  
 aagagtttcg aggaaagcct gccggcgta ccaatcgata aaggcgcgat gatggtaaac 660  
 gcgtggcgtt acctcgatcc gcagggttcg ccgattgatt tgattgaagc gtcggacggt 720  
 ttttacacca agacgtattt gcagggtgtc tccgaaggcg gggcgaaacc gttgaacctg 780  
 cctaattgatt gcgatgttgt cggctatctg gcgggacatc ttttgctgac gctgcgcaag 840  
 gactggcacc gcgcgaacca aagctatccg agtggcgcgt tgggtggcgg gaaactgaat 900  
 cggggcgaa cggggcggc gcagcttttg tttgcgcccg atgaaacgca ggcatggaa 960  
 agcgtggaaa cgaccaagcg ttttgtggtg gcaagcctgc tggagaatgt acaaggccgt 1020  
 ctgaaagcgt ggcggtttgc cgacagcaaa tggcaggaag ccgagttgcc gcacctgccc 1080  
 tcgggcgcgt tggaaatgac cgaccaaccg tggggcggcg acgtggttta tcttgccgcc 1140  
 agcgatttca ccacgcgcgt gacgtgttt gcgctggatt tgaacgtgat ggaactgacc 1200  
 gtcattgcgc tccagccgca gcagtttgtt tcagacggca tcgaagtgcg gcagttttgg 1260  
 gcggtgtcgt ccgacggcga acgcattcct tatttcacg tcggcaaaaa cgcgcgcgcc 1320  
 gacacgccga ccttagtcta tgcttacgga ggtttcggca ttctgaatt gccgcattat 1380  
 ctgggcagcg tcggcaataa ttggctggaa gagggcaatg cctttgtatt ggcaaacatc 1440  
 cgcgcgcggc gagaattcgg cccgcgctgg catcaggcgg cgcagggaat cagcaaacac 1500  
 aaaagcgttg atgatttgtt ggcagtcgtg cgtgatttgt ccgaacgcgg catgagttcg 1560  
 cccaaacaca tcggcttgca gggcggcagc aacggcggcc tgattaccgc cgccgccttc 1620  
 gtgcgcgaac cgaaagcat cgggtgcgctg gtgtgcgaag taccgctgac cgatatgatc 1680  
 cgttatccgc tgctgtccgc cggttcaagt tggacggacg aatacggcaa tccgcagaaa 1740  
 tacgaagcct gcaaacgcg gctgggcgaa ttgtcgccgt atcacaatct ttcagacggc 1800  
 atcgattatc cgcccgcact cattaccacc agcctcagcg acgaccgcgt ccatcccgcc 1860  
 cacgcgctca aattctacgc caaactgcgc gaaacctcgc cgcaatcttg gctctactcg 1920  
 cctgacggcg gcggccatac cggcaacggc acccaacgcg aatccgccga caaactcgcc 1980  
 tgcgtgttgc tgtttttgaa agaatttttg ggataa 2016

<210> 160  
 <211> 671  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 160  
 Met Lys Ser Tyr Pro Asp Pro Tyr Arg His Phe Glu Asn Leu Asp Ser  
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 Ala Glu Thr Gln Asn Phe Ala Ala Glu Ala Asn Ala Glu Thr Arg Ala  
 20 25 30

Arg Phe Leu Asn Asn Asp Lys Ala Arg Ala Leu Ser Asp Gly Ile Leu  
 35 40 45  
 Asn Gln Met Gln Asp Thr Arg Gln Ile Pro Phe Cys Gln Glu His Arg  
 50 55 60  
 Ala Arg Met Tyr His Phe His Gln Asn Ala Glu Tyr Pro Lys Gly Val  
 65 70 75 80  
 Tyr Arg Met Cys Thr Ala Ala Thr Tyr Arg Ser Gly Tyr Pro Glu Trp  
 85 90 95  
 Lys Ile Leu Phe Ser Val Ala Asp Phe Asp Glu Leu Leu Gly Asp Asp  
 100 105 110  
 Val Tyr Leu Gly Gly Val Ser His Leu Val Glu Gln Pro Asn Arg Ala  
 115 120 125  
 Leu Leu Thr Leu Asn Lys Ser Gly Gly Asp Thr Ala Tyr Thr Leu Glu  
 130 135 140  
 Val Asp Leu Glu Ala Gly Glu Leu Val Glu Gly Gly Phe His Phe Pro  
 145 150 155 160  
 Ala Gly Lys Asn His Val Ser Trp Arg Asp Glu Asn Ser Val Trp Val  
 165 170 175  
 Cys Pro Ala Trp Asp Glu Arg Gln Leu Thr Glu Ser Gly Tyr Pro Arg  
 180 185 190  
 Glu Val Trp Leu Val Glu Arg Gly Lys Ser Phe Glu Glu Ser Leu Pro  
 195 200 205  
 Ala Tyr Gln Ile Asp Lys Gly Ala Met Met Val Asn Ala Trp Arg Tyr  
 210 215 220  
 Leu Asp Pro Gln Gly Ser Pro Ile Asp Leu Ile Glu Ala Ser Asp Gly  
 225 230 235 240  
 Phe Tyr Thr Lys Thr Tyr Leu Gln Val Ser Ser Glu Gly Gly Ala Lys  
 245 250 255  
 Pro Leu Asn Leu Pro Asn Asp Cys Asp Val Val Gly Tyr Leu Ala Gly  
 260 265 270  
 His Leu Leu Leu Thr Leu Arg Lys Asp Trp His Arg Ala Asn Gln Ser  
 275 280 285  
 Tyr Pro Ser Gly Ala Leu Val Ala Val Lys Leu Asn Arg Gly Glu Leu  
 290 295 300  
 Gly Ala Ala Gln Leu Leu Phe Ala Pro Asp Glu Thr Gln Ala Leu Glu  
 305 310 315 320  
 Ser Val Glu Thr Thr Lys Arg Phe Val Val Ala Ser Leu Leu Glu Asn  
 325 330 335

Val	Gln	Gly	Arg	Leu	Lys	Ala	Trp	Arg	Phe	Ala	Asp	Ser	Lys	Trp	Gln	340	345	350	
Glu	Ala	Glu	Leu	Pro	His	Leu	Pro	Ser	Gly	Ala	Leu	Glu	Met	Thr	Asp	355	360	365	
Gln	Pro	Trp	Gly	Gly	Asp	Val	Val	Tyr	Leu	Ala	Ala	Ser	Asp	Phe	Thr	370	375	380	
Thr	Pro	Leu	Thr	Leu	Phe	Ala	Leu	Asp	Leu	Asn	Val	Met	Glu	Leu	Thr	385	390	395	400
Val	Met	Arg	Leu	Gln	Pro	Gln	Gln	Phe	Val	Ser	Asp	Gly	Ile	Glu	Val	405	410	415	
Arg	Gln	Phe	Trp	Ala	Val	Ser	Ser	Asp	Gly	Glu	Arg	Ile	Pro	Tyr	Phe	420	425	430	
His	Val	Gly	Lys	Asn	Ala	Ala	Pro	Asp	Thr	Pro	Thr	Leu	Val	Tyr	Ala	435	440	445	
Tyr	Gly	Gly	Phe	Gly	Ile	Pro	Glu	Leu	Pro	His	Tyr	Leu	Gly	Ser	Val	450	455	460	
Gly	Lys	Tyr	Trp	Leu	Glu	Glu	Gly	Asn	Ala	Phe	Val	Leu	Ala	Asn	Ile	465	470	475	480
Arg	Gly	Gly	Gly	Glu	Phe	Gly	Pro	Arg	Trp	His	Gln	Ala	Ala	Gln	Gly	485	490	495	
Ile	Ser	Lys	His	Lys	Ser	Val	Asp	Asp	Leu	Leu	Ala	Val	Val	Arg	Asp	500	505	510	
Leu	Ser	Glu	Arg	Gly	Met	Ser	Ser	Pro	Lys	His	Ile	Gly	Leu	Gln	Gly	515	520	525	
Gly	Ser	Asn	Gly	Gly	Leu	Ile	Thr	Ala	Ala	Ala	Phe	Val	Arg	Glu	Pro	530	535	540	
Gln	Ser	Ile	Gly	Ala	Leu	Val	Cys	Glu	Val	Pro	Leu	Thr	Asp	Met	Ile	545	550	555	560
Arg	Tyr	Pro	Leu	Leu	Ser	Ala	Gly	Ser	Ser	Trp	Thr	Asp	Glu	Tyr	Gly	565	570	575	
Asn	Pro	Gln	Lys	Tyr	Glu	Ala	Cys	Lys	Arg	Arg	Leu	Gly	Glu	Leu	Ser	580	585	590	
Pro	Tyr	His	Asn	Leu	Ser	Asp	Gly	Ile	Asp	Tyr	Pro	Pro	Ala	Leu	Ile	595	600	605	
Thr	Thr	Ser	Leu	Ser	Asp	Asp	Arg	Val	His	Pro	Ala	His	Ala	Leu	Lys	610	615	620	
Phe	Tyr	Ala	Lys	Leu	Arg	Glu	Thr	Ser	Pro	Gln	Ser	Trp	Leu	Tyr	Ser	625	630	635	640

Pro Asp Gly Gly Gly His Thr Gly Asn Gly Thr Gln Arg Glu Ser Ala  
645 650 655

Asp Lys Leu Ala Cys Val Leu Leu Phe Leu Lys Glu Phe Leu Gly  
660 665 670

<210> 161  
<211> 2016  
<212> DNA  
<213> Neisseria meningitidis

<400> 161  
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cgcgcgcgtt cagacggcat tttggcgag ttgcaggaca cgcgcgcgat tccgttttgt 180  
caggaacacc gcgcgcggat gtaccatttc catcaggacg cggagtatcc gaagggcggtg 240  
taccgcgtgt gtaccgcggc gacgtatcgt tccggctatc ccgagtggaa aatcctgttt 300  
tcggtggcgg atttcgacga attgcttggc gacgatgtgt atttgggcgg cgtgtcgcac 360  
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tacacgctgg aagtggattt ggaagcaggg gagttggtcg aaggcggttt tcactttccg 480  
gcaggcaaaa accatgtgtc gtggcgcgat gaaaacagcg tgtgggtgtg tccggcttgg 540  
aacgaacgcc agttgaccca atcgggctat ccgcgcgaag tatggctggt ggaacgcggc 600  
aagagtttgc aggaaagcct gcctgtgtat caaatcggcg aagacggcat gatggtgaac 660  
gcgtggcggt atctcgatcc gcagggttcg ccgattgatt tgattgaagc gtcggacggt 720  
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cccaacgatt gcgacgtggt cggctatctg gcggggcatc ttttgctgac gctgcgcaag 840  
gactggaacc gcgcgaacca aagctatccg agcggcgcgc tgggtggcgtg gaagctgaat 900  
cggggcgaa cggggcggc gcagcttttg tttgcgccg atgaaacgca ggcattggaa 960  
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gtcatgcgcc gccagccgca gcagtttgat tcagacggca ttaacgtgca gcagttttgg 1260  
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gacatgccga cgctggtcta tgcctacggc ggtttcggca ttcccgaatt gccgcattat 1380  
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cgcggcggcg gcgagttcgg cccgcgctgg catcaggcgg cgcagggaat cagcaaacat 1500  
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cccgaacaca tcggcttgca gggcggcgac aacggcggac tgattactgc cgccgccttc 1620  
  
gtgcgcgaac cgcaaagcat cggcgcgctg gtgtgcgaag tgccgctgac cgacatgac 1680  
cgttatccgc tgctctccgc cggttcaagc tggacagacg aatacggcaa tccgcaaaaa 1740  
tacgaagtct gcaaacgcgc gttgggcgaa ttgtcgccgt atcacaatct ttcagacggc 1800  
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cacgcgtca agttctacgc caaactgcgc gaaacctccg cgcaatcttg gctctactcg 1920  
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tgcgctcttg tgtttttgaa agagtttttg ggctaa 2016

<210> 162  
<211> 671  
<212> PRT  
<213> Neisseria meningitidis

<400> 162  
Met Lys Ser Tyr Pro Asp Pro Tyr Arg His Phe Glu Asn Leu Asp Ser

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Ala Glu Thr Gln Asn Phe Ala Ala Glu Ala Asn Ala Glu Thr Arg Ala	20	25	30
Arg Phe Leu Glu Asn Asp Lys Ala Arg Ala Leu Ser Asp Gly Ile Leu	35	40	45
Ala Gln Leu Gln Asp Thr Arg Gln Ile Pro Phe Cys Gln Glu His Arg	50	55	60
Ala Arg Met Tyr His Phe His Gln Asp Ala Glu Tyr Pro Lys Gly Val	65	70	75
Tyr Arg Val Cys Thr Ala Ala Thr Tyr Arg Ser Gly Tyr Pro Glu Trp	85	90	95
Lys Ile Leu Phe Ser Val Ala Asp Phe Asp Glu Leu Leu Gly Asp Asp	100	105	110
Val Tyr Leu Gly Gly Val Ser His Leu Val Glu Gln Pro Asn Arg Ala	115	120	125
Leu Leu Thr Leu Ser Lys Leu Gly Ser Asp Thr Ala Tyr Thr Leu Glu	130	135	140
Val Asp Leu Glu Ala Gly Glu Leu Val Glu Gly Gly Phe His Phe Pro	145	150	155
Ala Gly Lys Asn His Val Ser Trp Arg Asp Glu Asn Ser Val Trp Val	165	170	175
Cys Pro Ala Trp Asn Glu Arg Gln Leu Thr Gln Ser Gly Tyr Pro Arg	180	185	190
Glu Val Trp Leu Val Glu Arg Gly Lys Ser Phe Glu Glu Ser Leu Pro	195	200	205
Val Tyr Gln Ile Gly Glu Asp Gly Met Met Val Asn Ala Trp Arg Tyr	210	215	220
Leu Asp Pro Gln Gly Ser Pro Ile Asp Leu Ile Glu Ala Ser Asp Gly	225	230	235
Phe Tyr Thr Lys Thr Tyr Leu Arg Val Ser Ala Glu Gly Glu Ala Lys	245	250	255
Pro Leu Asn Leu Pro Asn Asp Cys Asp Val Val Gly Tyr Leu Ala Gly	260	265	270
His Leu Leu Leu Thr Leu Arg Lys Asp Trp Asn Arg Ala Asn Gln Ser	275	280	285
Tyr Pro Ser Gly Ala Leu Val Ala Val Lys Leu Asn Arg Gly Glu Leu	290	295	300
Gly Ala Ala Gln Leu Leu Phe Ala Pro Asp Glu Thr Gln Ala Leu Glu			

305		310		315		320
Ser Val Glu Thr Thr Lys Arg Phe Val Val Ala Ser Leu Leu Glu Asn						
		325		330		335
Val Gln Gly Arg Leu Lys Ala Trp Arg Phe Ala Asp Gly Lys Trp Gln						
		340		345		350
Glu Val Glu Leu Pro Arg Leu Pro Ser Gly Ala Leu Glu Met Thr Asp						
		355		360		365
Gln Pro Trp Gly Gly Asp Val Val Tyr Leu Ala Ala Ser Asp Phe Thr						
		370		375		380
Thr Pro Leu Thr Leu Phe Ala Leu Asp Leu Asn Val Met Glu Leu Thr						
		385		390		400
Val Met Arg Arg Gln Pro Gln Gln Phe Asp Ser Asp Gly Ile Asn Val						
		405		410		415
Gln Gln Phe Trp Thr Thr Ser Ala Asp Gly Glu Arg Ile Pro Tyr Phe						
		420		425		430
His Val Gly Lys Asn Ala Ala Pro Asp Met Pro Thr Leu Val Tyr Ala						
		435		440		445
Tyr Gly Gly Phe Gly Ile Pro Glu Leu Pro His Tyr Leu Gly Ser Ile						
		450		455		460
Gly Lys Tyr Trp Leu Glu Glu Gly Asn Ala Phe Val Leu Ala Asn Ile						
		465		470		480
Arg Gly Gly Gly Glu Phe Gly Pro Arg Trp His Gln Ala Ala Gln Gly						
		485		490		495
Ile Ser Lys His Lys Ser Val Asp Asp Leu Leu Ala Val Val Arg Asp						
		500		505		510
Leu Ser Glu Arg Gly Ile Ser Ser Pro Glu His Ile Gly Leu Gln Gly						
		515		520		525
Gly Ser Asn Gly Gly Leu Ile Thr Ala Ala Ala Phe Val Arg Glu Pro						
		530		535		540
Gln Ser Ile Gly Ala Leu Val Cys Glu Val Pro Leu Thr Asp Met Ile						
		545		550		560
Arg Tyr Pro Leu Leu Ser Ala Gly Ser Ser Trp Thr Asp Glu Tyr Gly						
		565		570		575
Asn Pro Gln Lys Tyr Glu Val Cys Lys Arg Arg Leu Gly Glu Leu Ser						
		580		585		590
Pro Tyr His Asn Leu Ser Asp Gly Ile Asp Tyr Pro Pro Ala Leu Ile						
		595		600		605
Thr Thr Ser Leu Ser Asp Asp Arg Val His Pro Ala His Ala Leu Lys						

610	615	620
Phe Tyr Ala Lys Leu Arg Glu Thr Ser Ala Gln Ser Trp Leu Tyr Ser		
625	630	635 640
Pro Asp Gly Gly Gly His Thr Gly Asn Gly Thr Gln Arg Glu Ser Ala		
	645	650 655
Asp Glu Leu Ala Cys Val Leu Leu Phe Leu Lys Glu Phe Leu Gly		
	660	665 670

<210> 163  
 <211> 2016  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 163

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cgcgcatgtg	ctgacggcat	tttggcgca	ttgcaggaca	cgcggcacaa	tccgttttgt	180
caggaacacc	gcgcgcggat	gtaccatttc	catcaagatg	cggaatatcc	gaaaggcgtg	240
taccgcgtgt	gtaccgcggc	gaattaccgt	tcgggctatc	ctgagtggaa	aatcctgttt	300
tcggtggcgg	atttcgacga	attgctcggg	gacgatgtat	atctaggcgg	cgtgtcgcac	360
ctggtggaac	agcccaaccg	cgcgttggtt	acactgagca	aatcgggcgg	cgataccgcg	420
tacacgctgg	aagtggattt	ggaagcaggg	gagttggtag	aaggcgggtt	tcactttccg	480
gcaggcaaaa	accatgtgtc	gtggcgcgat	gaaaacagcg	tgtgggtgtg	tccggcttgg	540
gacgaacgcc	agttgaccga	atcgggctat	ccgcgcgagg	tgtggctggt	ggaacgcggc	600
aagagtttcg	aggaaagcct	gccgggtgtac	caaattgctg	aagacggcat	gatggtgaac	660
gcgtggcggt	acctcgatcc	gcagggttcg	ccgattgatt	tgattgaagc	gtctgacggg	720
ttttacacca	aaacctattt	gcagggtctc	gccgaaggcg	aagcgaaacc	gttaaaccctg	780
cccaacgatt	gcgcgtagt	cggctatctg	gccggacatc	ttttgctgac	cttgcgtaaa	840
gactggcacc	gcgcgaacca	aagctatccg	agtggcgcat	tggtagcagt	aaaattaaac	900
cgcggcgaat	tgggcgcggc	gcagcttttg	tttgcgcca	atgaaacgca	ggcattggaa	960
agcgtggaaa	cgaccaagcg	ttttgtcgtg	gcgagcctgc	tggaacacgt	acagggtcgt	1020
ctgaaagcgt	ggcgttttac	tgatggcaaa	tggcaggaaa	ccgagttgcc	gcgcctgcct	1080
tcggggcgct	tggaatgac	cgaccaaccg	tggggggcgg	acgtagttta	ccttgccgcc	1140
agcgatttca	ccacgccgct	gacgctgttt	gcattggatt	tgaacgtgat	ggaactgacc	1200
gtcatgcgcc	gccagccgca	gcagtttgat	tcagacggca	ttaacgtgca	gcagttttgg	1260
acgacttcgg	ctgacggcga	gcgcattcct	tatttccacg	tcggcaaaaa	cgccgcgccc	1320
gacatgccga	cgtcgttcta	tgcttacggc	ggtttcggca	ttcccgaatt	gccgcattat	1380
ctgggcagca	ttggcaaata	ttggctggaa	gagggcaatg	cctttgtatt	ggcgaacatc	1440
cgcggcggcg	gcgagttcgg	cccgcgctgg	catcaggcgg	cgcagggaat	cagcaaacat	1500
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cccgaacaca	tcggcttgca	gggcggcagc	aacggcggac	tgattactgc	cgccgccttc	1620
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cgttatccgc	tgctctccgc	cggttcaagc	tggacagacg	aatacggcaa	tccgcaaaaa	1740
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atcgattatc	cgcccgcgct	cattaccacc	agcctgtccg	acgatcgcgt	ccatcccgcc	1860
cacgcgctca	agttctacgc	caaactgcgc	gaaacctcgc	cgcaatcttg	gctctactcg	1920
cctgacggcg	gcggccatac	cggcaacggc	acgcagcgcg	aagccgccga	cgaactcgcc	1980
tgcggtgttc	tgtttttgaa	agagtttttg	ggctaa			2016

<210> 164  
 <211> 671  
 <212> PRT



<213> Neisseria meningitidis

<400> 164

Met Lys Ser Tyr Pro Asp Pro Tyr Arg His Phe Glu Asn Leu Asp Ser  
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Ala Glu Thr Gln Asn Phe Ala Ala Glu Ala Asn Ala Glu Thr Arg Ala  
20 25 30

Arg Phe Leu Asn Asn Asp Lys Ala Arg Ala Leu Ser Asp Gly Ile Leu  
35 40 45

Ala Gln Leu Gln Asp Thr Arg Gln Ile Pro Phe Cys Gln Glu His Arg  
50 55 60

Ala Arg Met Tyr His Phe His Gln Asp Ala Glu Tyr Pro Lys Gly Val  
65 70 75 80

Tyr Arg Val Cys Thr Ala Ala Thr Tyr Arg Ser Gly Tyr Pro Glu Trp  
85 90 95

Lys Ile Leu Phe Ser Val Ala Asp Phe Asp Glu Leu Leu Gly Asp Asp  
100 105 110

Val Tyr Leu Gly Gly Val Ser His Leu Val Glu Gln Pro Asn Arg Ala  
115 120 125

Leu Leu Thr Leu Ser Lys Ser Gly Gly Asp Thr Ala Tyr Thr Leu Glu  
130 135 140

Val Asp Leu Glu Ala Gly Glu Leu Val Glu Gly Gly Phe His Phe Pro  
145 150 155 160

Ala Gly Lys Asn His Val Ser Trp Arg Asp Glu Asn Ser Val Trp Val  
165 170 175

Cys Pro Ala Trp Asp Glu Arg Gln Leu Thr Glu Ser Gly Tyr Pro Arg  
180 185 190

Glu Val Trp Leu Val Glu Arg Gly Lys Ser Phe Glu Glu Ser Leu Pro  
195 200 205

Val Tyr Gln Ile Ala Glu Asp Gly Met Met Val Asn Ala Trp Arg Tyr  
210 215 220

Leu Asp Pro Gln Gly Ser Pro Ile Asp Leu Ile Glu Ala Ser Asp Gly  
225 230 235 240

Phe Tyr Thr Lys Thr Tyr Leu Gln Val Ser Ala Glu Gly Glu Ala Lys  
245 250 255

Pro Leu Asn Leu Pro Asn Asp Cys Asp Val Val Gly Tyr Leu Ala Gly  
260 265 270

His Leu Leu Leu Thr Leu Arg Lys Asp Trp His Arg Ala Asn Gln Ser  
275 280 285

Tyr	Pro	Ser	Gly	Ala	Leu	Val	Ala	Val	Lys	Leu	Asn	Arg	Gly	Glu	Leu	290	295	300	
Gly	Ala	Ala	Gln	Leu	Leu	Phe	Ala	Pro	Asn	Glu	Thr	Gln	Ala	Leu	Glu	305	310	315	320
Ser	Val	Glu	Thr	Thr	Lys	Arg	Phe	Val	Val	Ala	Ser	Leu	Leu	Glu	Asn	325	330	335	
Val	Gln	Gly	Arg	Leu	Lys	Ala	Trp	Arg	Phe	Thr	Asp	Gly	Lys	Trp	Gln	340	345	350	
Glu	Thr	Glu	Leu	Pro	Arg	Leu	Pro	Ser	Gly	Ala	Leu	Glu	Met	Thr	Asp	355	360	365	
Gln	Pro	Trp	Gly	Gly	Asp	Val	Val	Tyr	Leu	Ala	Ala	Ser	Asp	Phe	Thr	370	375	380	
Thr	Pro	Leu	Thr	Leu	Phe	Ala	Leu	Asp	Leu	Asn	Val	Met	Glu	Leu	Thr	385	390	395	400
Val	Met	Arg	Arg	Gln	Pro	Gln	Gln	Phe	Asp	Ser	Asp	Gly	Ile	Asn	Val	405	410	415	
Gln	Gln	Phe	Trp	Thr	Thr	Ser	Ala	Asp	Gly	Glu	Arg	Ile	Pro	Tyr	Phe	420	425	430	
His	Val	Gly	Lys	Asn	Ala	Ala	Pro	Asp	Met	Pro	Thr	Leu	Val	Tyr	Ala	435	440	445	
Tyr	Gly	Gly	Phe	Gly	Ile	Pro	Glu	Leu	Pro	His	Tyr	Leu	Gly	Ser	Ile	450	455	460	
Gly	Lys	Tyr	Trp	Leu	Glu	Glu	Gly	Asn	Ala	Phe	Val	Leu	Ala	Asn	Ile	465	470	475	480
Arg	Gly	Gly	Gly	Glu	Phe	Gly	Pro	Arg	Trp	His	Gln	Ala	Ala	Gln	Gly	485	490	495	
Ile	Ser	Lys	His	Lys	Ser	Val	Asp	Asp	Leu	Leu	Ala	Val	Val	Ser	Asp	500	505	510	
Leu	Ser	Glu	Arg	Gly	Ile	Ser	Ser	Pro	Glu	His	Ile	Gly	Leu	Gln	Gly	515	520	525	
Gly	Ser	Asn	Gly	Gly	Leu	Ile	Thr	Ala	Ala	Ala	Phe	Val	Arg	Glu	Pro	530	535	540	
Gln	Ser	Ile	Gly	Ala	Leu	Val	Cys	Glu	Val	Pro	Leu	Thr	Asp	Met	Ile	545	550	555	560
Arg	Tyr	Pro	Leu	Leu	Ser	Ala	Gly	Ser	Ser	Trp	Thr	Asp	Glu	Tyr	Gly	565	570	575	
Asn	Pro	Gln	Lys	Tyr	Glu	Val	Cys	Lys	Arg	Arg	Leu	Gly	Glu	Leu	Ser	580	585	590	

Pro Tyr His Asn Leu Ser Asp Gly Ile Asp Tyr Pro Pro Ala Leu Ile  
595 600 605

Thr Thr Ser Leu Ser Asp Asp Arg Val His Pro Ala His Ala Leu Lys  
610 615 620

Phe Tyr Ala Lys Leu Arg Glu Thr Ser Pro Gln Ser Trp Leu Tyr Ser  
625 630 635 640

Pro Asp Gly Gly Gly His Thr Gly Asn Gly Thr Gln Arg Glu Ala Ala  
645 650 655

Asp Glu Leu Ala Cys Val Leu Leu Phe Leu Lys Glu Phe Leu Gly  
660 665 670

<210> 165

<211> 606

<212> DNA

<213> Neisseria gonorrhoeae

<400> 165

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cagccggggg ttttctcttt gatgtattcg aaggaaacgg gctgcccgtg cccttcgttg 180  
cgtaaagatt cgtccacggg cggcaggccg atgtcgccgt gtatccaact tgccaaccgc 240  
gattgcgtgc cgaaggcgga caccttggtg cctgtaaccg acagcaccag cccgcgtcct 300  
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gccacgcgcg ctctcttacc gaaaatccgc gacagggtct ccattctgctt ctgcgccgtg 420  
gtgcggatat tgccgttgtc caccgtcaaa tctatggtgg tcgcgttttt cgccaactgt 480  
tcatacgctt ccgcaccgga cccgcgggta atgacaaact gcggattgtg gcggtgcagg 540  
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aaatag 606

<210> 166

<211> 201

<212> PRT

<213> Neisseria gonorrhoeae

<400> 166

Met Thr Met Ile Cys Leu Arg Phe Gln Ala Phe Val Pro His Thr Ser  
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Ala Leu Ser Asn Thr Ser Thr Ala Ala Gly Pro Ser Cys Pro Met Ala  
20 25 30

Ala Val Arg Ser Met Met Lys Ile Gln Pro Gly Phe Phe Ser Leu Met  
35 40 45

Tyr Ser Lys Glu Thr Gly Cys Pro Cys Pro Ser Leu Arg Lys Asp Ser  
50 55 60

Ser Thr Gly Gly Arg Pro Met Ser Pro Cys Ile Gln Leu Ala Asn Arg  
65 70 75 80

Asp Cys Val Pro Lys Ala Asp Thr Leu Leu Pro Val Thr Asp Ser Thr  
                     85                    90                    95  
 Ser Pro Arg Pro Leu Pro Leu Ala Ala Ser Arg Phe Trp Ala Asn Ser  
                     100                    105                    110  
 Ala Ser Ile Cys Ala Phe Asn Ser Ala Thr Arg Ala Ser Leu Pro Lys  
                     115                    120                    125  
 Ile Arg Asp Arg Val Ser Ile Cys Phe Ser Pro Leu Val Arg Ile Leu  
                     130                    135                    140  
 Pro Leu Ser Thr Val Lys Ser Met Val Val Ala Phe Phe Ala Asn Cys  
                     145                    150                    155                    160  
 Ser Tyr Ala Ser Ala Pro Gly Pro Pro Val Met Thr Asn Cys Gly Leu  
                     165                    170                    175  
 Trp Arg Cys Arg Asp Ser Gln Ser Gly Ser Asn Ser Val Pro Thr Val  
                     180                    185                    190  
 Ala Ala Leu Ser Asn Ala Gly Cys Lys  
                     195                    200

<210> 167  
 <211> 606  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 167  
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 caatcgggggt ttttctcttt gatgtattcg aaggaaacag gctgcccgtg cccctcgttg 180  
 cgtaaagatt cgtctacagg cggtaggccg atgtcgccgt gtatccaact tgccaaccgc 240  
 gactgcgtgc cgaaggcgga caccctgttg cccgtaaccg acagcaccag cccgcgtcct 300  
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 gccgcgcgcg cttccttgcc gaaaatccgc gccaaaggtct ccatctgctt ttcgcccgtg 420  
 gtgcggatat tgccgttgte caccgtcaga tctatgggtg tcgcgttttt cgctaactgt 480  
 tcatacgtt ccgcgcccgg cccgcgggta atgacaagct gaggattgta gcggtgcagg 540  
 gcttcgtaat cgggctcgaa cagcgtcccc accgttgccg ccttgtcaaa tgcaggctgc 600  
 aaataa 606

<210> 168  
 <211> 201  
 <212> PRT  
 <213> Neisseria meningitides

<220>  
 <221> UNSURE  
 <222> (20)  
 <223> Xaa is any amino acid

<220>  
 <221> UNSURE  
 <222> (27)

<223> Xaa is any amino acid

<220>

<221> UNSURE

<222> (174)

<223> Xaa is any amino acid

<220>

<221> UNSURE

<222> (177)

<223> Xaa is any amino acid

<220>

<221> UNSURE

<222> (183)

<223> Xaa is any amino acid

<400> 168

Met	Thr	Met	Ile	Cys	Leu	Arg	Phe	Gln	Ala	Phe	Val	Pro	Arg	Thr	Ser
1				5					10					15	

Ala	Leu	Ser	Xaa	Thr	Ser	Thr	Ala	Ala	Gly	Xaa	Ser	Cys	Pro	Met	Ala
			20					25					30		

Ala	Val	Arg	Ser	Met	Met	Lys	Ile	Gln	Ser	Gly	Phe	Phe	Ser	Leu	Met
		35					40					45			

Tyr	Ser	Lys	Glu	Thr	Gly	Cys	Pro	Cys	Pro	Ser	Leu	Arg	Lys	Asp	Ser
	50					55					60				

Ser	Thr	Gly	Gly	Arg	Pro	Met	Ser	Pro	Cys	Ile	Gln	Leu	Ala	Asn	Arg
	65				70					75					80

Asp	Cys	Val	Pro	Lys	Ala	Asp	Thr	Leu	Leu	Pro	Val	Thr	Asp	Ser	Thr
				85					90					95	

Ser	Pro	Arg	Pro	Leu	Pro	Leu	Ala	Ala	Ser	Arg	Val	Trp	Ala	Asn	Ser
			100					105						110	

Ala	Ser	Ile	Cys	Ala	Phe	Asn	Ser	Ala	Ala	Arg	Ala	Ser	Leu	Pro	Lys
		115					120					125			

Ile	Arg	Ala	Lys	Val	Ser	Ile	Cys	Phe	Ser	Pro	Leu	Val	Arg	Ile	Leu
	130					135					140				

Pro	Leu	Ser	Thr	Val	Arg	Ser	Met	Val	Val	Ala	Phe	Phe	Ala	Asn	Cys
145					150					155					160

Ser	Tyr	Ala	Ser	Ala	Pro	Gly	Pro	Pro	Val	Met	Thr	Ser	Xaa	Gly	Leu
				165					170					175	

Xaa	Arg	Cys	Arg	Ala	Ser	Xaa	Ser	Gly	Ser	Asn	Ser	Val	Pro	Thr	Val
			180					185					190		

Ala	Ala	Leu	Ser	Asn	Ala	Gly	Cys	Lys
		195					200	

<210> 169  
 <211> 606  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 169  
 atgacgatga tttgcttgcg cttccaagcg ttcgtgccgc gtaccagcgc gttatccaat 60  
 acttcgacag ccgcgggccc ttcctgcccg atggcggcgg tacggtcgat gatgaaaatc 120  
 caatcggggg ttttctcttt gatgtattcg aaggaaacag gctgcccggtg cccctcgttg 180  
 cgtaaagatt cgtctacagg cggtaggcgg atgtcgccgt gtatccaact tgccaaccgc 240  
 gactgcgtgc cgaaggcgga caccttggtg cccgtaaccg acagcaccag cccgcgtcct 300  
 ttgccttttg cggcttcgcg cgtttgggcg aacagcgcgt caatctgcgc cttcaattcc 360  
 gccgcgcgcg cttccttgcc gaaaatccgc gccaaaggctt ccatctgctt ttcgccgctg 420  
 gtgcggatat tgccgttgtc caccgtcaga tctatgggtg tcgcgttttt cgccaactgt 480  
 tcatacgctt ccgcgcccgg cccgcgggta atgacaagct gaggattgta gcggtgcagg 540  
 gcttcgtaat cgggctcgaa cagcgtcccc accggttgccg ccttgtcaaa tgcaggctgc 600  
 aaataa 606

<210> 170  
 <211> 198  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 170  
 Met Thr Met Ile Cys Leu Arg Phe Gln Ala Phe Val Pro Arg Thr Ser  
 1 5 10 15  
 Ala Leu Ser Asn Thr Ser Thr Ala Ala Gly Pro Ser Cys Pro Met Ala  
 20 25 30  
 Ala Val Arg Ser Met Met Lys Ile Gln Ser Gly Phe Phe Ser Leu Met  
 35 40 45  
 Tyr Ser Lys Glu Thr Gly Cys Pro Cys Pro Ser Leu Arg Lys Asp Ser  
 50 55 60  
 Ser Thr Gly Gly Arg Pro Met Ser Pro Cys Ile Gln Leu Ala Asn Arg  
 65 70 75 80  
 Asp Cys Val Pro Lys Ala Asp Thr Leu Leu Pro Val Thr Asp Ser Thr  
 85 90 95  
 Ser Pro Arg Pro Leu Pro Leu Ala Ala Ser Arg Val Trp Ala Asn Ser  
 100 105 110  
 Ala Ser Ile Cys Ala Phe Asn Ser Ala Ala Arg Ala Ser Leu Pro Lys  
 115 120 125  
 Ile Arg Ala Lys Val Ser Ile Cys Phe Ser Pro Leu Val Arg Ile Leu  
 130 135 140  
 Pro Leu Ser Thr Val Arg Ser Met Val Val Ala Phe Phe Ala Asn Cys  
 145 150 155 160  
 Ser Tyr Ala Ser Ala Pro Gly Pro Pro Val Met Thr Ser Gly Leu Arg

165 170 175  
 Cys Arg Ala Ser Ser Gly Ser Asn Ser Val Pro Thr Val Ala Ala Leu  
 180 185 190

Ser Asn Ala Gly Cys Lys  
 195

<210> 171  
 <211> 511  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 171  
 atgacgatga tttgcttgcg cttccaagcg ttcgtgccgc gtaccagcgc gttatccaat 60  
 acttcgacag ccgcggcgcc ttcttgccc atggcggcgg tacggtcgat gatgaaaatc 120  
 caatcggggt ttttctcttt gatgtattcg aaggaaacag gctgcccgtg cccctcgttg 180  
 cgtaaagatt cgtctacagg cggtaggcgg atgtcgccgt gtatccaact tgccaaccgc 240  
 gactgcgtgc cgaaggcgga caccttgttg cccgtaaccg acagcaccag cccgcgtcct 300  
 ttgccttttg cggtctcgcg cgtttgggcg aacagcgcgt caatctgcgc cttcaattcc 360  
 gccgcgcgcg cttccttgcc gaaaatccgc gccaaagtct ccatctgctt ttgcgcgctg 420  
 gtgcggatat tgccgttgtc caccgtcaga tctatggtgg tcgcgttttt cgctaactgt 480  
 tcatacgctt ccgcgcccgg cccgcgcgta a 511

<210> 172  
 <211> 173  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 172  
 Met Thr Met Ile Cys Leu Arg Phe Gln Ala Phe Val Pro Arg Thr Ser  
 1 5 10 15  
 Ala Leu Ser Asn Thr Ser Thr Ala Ala Gly Pro Ser Cys Pro Met Ala  
 20 25 30  
 Ala Val Arg Ser Met Met Lys Ile Gln Ser Gly Phe Phe Ser Leu Met  
 35 40 45  
 Tyr Ser Lys Glu Thr Gly Cys Pro Cys Pro Ser Leu Arg Lys Asp Ser  
 50 55 60  
 Ser Thr Gly Gly Arg Pro Met Ser Pro Cys Ile Gln Leu Ala Asn Arg  
 65 70 75 80  
 Asp Cys Val Pro Lys Ala Asp Thr Leu Leu Pro Val Thr Asp Ser Thr  
 85 90 95  
 Ser Pro Arg Pro Leu Pro Leu Ala Ala Ser Arg Val Trp Ala Asn Ser  
 100 105 110  
 Ala Ser Ile Cys Ala Phe Asn Ser Ala Ala Arg Ala Ser Leu Pro Lys  
 115 120 125  
 Ile Arg Ala Lys Val Ser Ile Cys Phe Ser Pro Leu Val Arg Ile Leu

130

135

140

Pro Leu Ser Thr Val Arg Ser Met Val Val Ala Phe Phe Ala Asn Cys  
 145 150 155 160

Ser Tyr Ala Ser Ala Pro Gly Pro Pro Val Met Thr Ser  
 165 170

&lt;210&gt; 173

&lt;211&gt; 511

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 173

atgacgatga tttgcttgcg cttccaagcg ttcgtgccgc gtaccagcgc gttatccaat 60  
 acttcgacag ccgccggccc ttctgcccgc atggcggcgg tacggtcgat gatgaaaatc 120  
 caatcggggg ttttctcttt gatgtattcg aaggaaacag gctgcccgtg cccctcgttg 180  
 cgtaaagatt cgtctacagg cggtaggcgc atgtcgccgt gtatccaact tgccaaccgc 240  
 gactgcgtgc cgaaggcgga caccctgttg cccgtaaccg acagcaccag cccgcgtcct 300  
 ttgccttttg cggttcgcgc cgtttgggcg aacagcgcgt caatctgcgc cttcaattcc 360  
 gccgcgcgcg cttccttgcc gaaaatccgc gccaaaggtc ccatctgctt ttcgccgctg 420  
 gtgcggatat tgccgttgtc caccgtcaga tctatggtgg tcgcgttttt cgccaactgt 480  
 tcatacgctt ccgcgccgcg cccgcgcgta a 511

&lt;210&gt; 174

&lt;211&gt; 173

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 174

Met Thr Met Ile Cys Leu Arg Phe Gln Ala Phe Val Pro Arg Thr Ser  
 1 5 10 15

Ala Leu Ser Asn Thr Ser Thr Ala Ala Gly Pro Ser Cys Pro Met Ala  
 20 25 30

Ala Val Arg Ser Met Met Lys Ile Gln Ser Gly Phe Phe Ser Leu Met  
 35 40 45

Tyr Ser Lys Glu Thr Gly Cys Pro Cys Pro Ser Leu Arg Lys Asp Ser  
 50 55 60

Ser Thr Gly Gly Arg Pro Met Ser Pro Cys Ile Gln Leu Ala Asn Arg  
 65 70 75 80

Asp Cys Val Pro Lys Ala Asp Thr Leu Leu Pro Val Thr Asp Ser Thr  
 85 90 95

Ser Pro Arg Pro Leu Pro Leu Ala Ala Ser Arg Val Trp Ala Asn Ser  
 100 105 110

Ala Ser Ile Cys Ala Phe Asn Ser Ala Ala Arg Ala Ser Leu Pro Lys  
 115 120 125

Ile Arg Ala Lys Val Ser Ile Cys Phe Ser Pro Leu Val Arg Ile Leu



130	135	140
Pro Leu Ser Thr Val Arg Ser Met Val Val Ala Phe Phe Ala Asn Cys		
145	150	155 160
Ser Tyr Ala Ser Ala Pro Gly Pro Pro Val Met Thr Ser		
165	170	

<210> 175  
 <211> 387  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 175  
 atggttggtt caaatcaaaa tatctatgcc gtcggcccat cagcactttt tcacatccga 60  
 aggcaaaaat ccgtaatgcc gcctgaacgc ttcgttgaac cgtcccgcgt ggcggtagcc 120  
 gcaaaagtgc atcgcggtt ggatggtgct gcccgattcg atgagggcga gcgcgtgttc 180  
 cagccgcagg cggcgagggc gtcggcgac ggtttcgccg gtttgcgctt tgaaatagcg 240  
 tttcaggtag cattcggttca gcccgcgcg gcgggcgatt tcggcgatgg tcagcgggcg 300  
 ggcaattcg ctgttcaaaa tatcggcggc ttcgtctatg cgccggcggc ggtagccgtt 360  
 gtcgtggcgg cggaaggtga agcgtaa 387

<210> 176  
 <211> 128  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 176  
 Met Val Val Ser Asn Gln Asn Ile Tyr Ala Val Gly Pro Ser Ala Leu  
 1 5 10 15  
 Phe His Ile Arg Arg Gln Lys Ser Val Met Pro Pro Glu Arg Phe Val  
 20 25 30  
 Glu Pro Ser Arg Val Ala Val Ala Ala Lys Val His Arg Gly Leu Asp  
 35 40 45  
 Gly Ala Ala Arg Phe Asp Glu Gly Glu Arg Val Phe Gln Pro Gln Ala  
 50 55 60  
 Ala Gln Ala Ser Gly Asp Gly Phe Ala Gly Leu Arg Phe Glu Ile Ala  
 65 70 75 80  
 Phe Gln Val Ala Phe Val Gln Pro Asp Ala Ala Gly Asp Phe Gly Asp  
 85 90 95  
 Gly Gln Arg Ala Gly Glu Phe Ala Val Gln Asn Ile Gly Gly Phe Val  
 100 105 110  
 Tyr Ala Pro Ala Ala Val Ala Val Val Val Ala Ala Glu Gly Glu Ala  
 115 120 125

<210> 177  
<211> 390  
<212> DNA  
<213> *Neisseria meningitidis*

<400> 177  
atggttggtt caaatcaaaa tatctatgcc gccggcccct cagcacttct tcacatccga 60  
aggcaaaaat ccgtaatgcc gtctgaacgc ttcgttgaac cgtcccgcgt ggcggtagcc 120  
gcaaaagtgc atggcggcgt ggacggtgct gccggattcg atgagggcga gcgcgtgttc 180  
cagccgcagg cggcgcaggc atccggcgac ggtttcgccg gtttgcgctt tgaaatagcg 240  
tttcaggtag cattcgttca gtccgacgcg gcgggcgatt tcggcgatgg tcagcggacg 300  
ggcgaattcg tgttgcagga tgcggcggc ttcgtctatg cgcgcacggc ggtaaccgtt 360  
gtcgtggcgg cggaaggtga agcgcaataa 390

<210> 178  
<211> 129  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 178  
Met Val Val Ser Asn Gln Asn Ile Tyr Ala Ala Gly Pro Ser Ala Leu  
1 5 10 15  
Leu His Ile Arg Arg Gln Lys Ser Val Met Pro Ser Glu Arg Phe Val  
20 25 30  
Glu Pro Ser Arg Val Ala Val Ala Lys Val His Gly Gly Leu Asp  
35 40 45  
Gly Ala Ala Gly Phe Asp Glu Gly Glu Arg Val Phe Gln Pro Gln Ala  
50 55 60  
Ala Gln Ala Ser Gly Asp Gly Phe Ala Gly Leu Arg Phe Glu Ile Ala  
65 70 75 80  
Phe Gln Val Ala Phe Val Gln Ser Asp Ala Ala Gly Asp Phe Gly Asp  
85 90 95  
Gly Gln Arg Thr Gly Glu Phe Val Leu Gln Asp Val Gly Gly Phe Val  
100 105 110  
Tyr Ala Pro Thr Ala Val Thr Val Val Val Ala Ala Glu Gly Glu Ala  
115 120 125  
Gln

<210> 179  
<211> 390  
<212> DNA  
<213> *Neisseria meningitidis*

<400> 179  
atggttggtt caaatcaaaa tatctatgcc gccggcccct cagcacttct tcacatccga 60

```

aggcaaaaat ccgtaatgcc gtctgaacgc ttcgttgaac cgtcccgcgt ggcggtagcc 120
gcaaaagtgc atggcggtt ggacggtgct gccggttcg atgagggcga gcgcgtgttc 180
cagccgcagg cggcgaggc atccggcgac ggtttcgccg gtttgcgctt tgaaatagcg 240
tttcaggtag cattcgttca gtccgacgcg gcgggcgatt tcggcgatgg tcagcggacg 300
ggcgaattcg tgttgcagga tgcggcggc ttcgtctatg cgccgacggc ggtaaccgtt 360
gtcgtggcgg cggaaggtga agcgcaataa 390

```

<210> 180  
 <211> 129  
 <212> PRT  
 <213> *Neisseria meningitidis*

```

<400> 180
Met Val Val Ser Asn Gln Asn Ile Tyr Ala Ala Gly Pro Ser Ala Leu
  1              5              10              15

Leu His Ile Arg Arg Gln Lys Ser Val Met Pro Ser Glu Arg Phe Val
      20              25              30

Glu Pro Ser Arg Val Ala Val Ala Ala Lys Val His Gly Gly Leu Asp
      35              40              45

Gly Ala Ala Gly Phe Asp Glu Gly Glu Arg Val Phe Gln Pro Gln Ala
      50              55              60

Ala Gln Ala Ser Gly Asp Gly Phe Ala Gly Leu Arg Phe Glu Ile Ala
      65              70              75              80

Phe Gln Val Ala Phe Val Gln Ser Asp Ala Ala Gly Asp Phe Gly Asp
      85              90              95

Gly Gln Arg Thr Gly Glu Phe Val Leu Gln Asp Val Gly Gly Phe Val
      100             105             110

Tyr Ala Pro Thr Ala Val Thr Val Val Val Ala Ala Glu Gly Glu Ala
      115             120             125

Gln

```

<210> 181  
 <211> 270  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

```

<400> 181
atgctgccc accagagcgt cgagttcttg ccacaagtcg tcgtttttga cgggctgttt 60
ggcggcggtt ttccagccgt tgcgcttcca accgtgtatc cagttttcca tgccgttttt 120
gacgtattgc gagtcggtgc agatgatgac ggtgcagcgg cgtttgagcg atttcagccc 180
ttcgataacg gcggtcagct ccatgcggtt gttggtggtt tgcgcttcgc cgccgaaaag 240
ttctttttcg cggctgccgt agcgcatata 270

```

<210> 182  
 <211> 89

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 182

Met Leu Pro Asp Gln Ser Val Glu Phe Leu Pro Gln Val Val Val Phe  
1 5 10 15

Asp Gly Leu Phe Gly Gly Gly Phe Pro Ala Val Ala Leu Pro Thr Val  
20 25 30

Tyr Pro Val Phe His Ala Val Phe Asp Val Leu Arg Val Gly Ala Asp  
35 40 45

Asp Asp Gly Ala Ala Ala Phe Glu Arg Phe Gln Pro Phe Asp Asn Gly  
50 55 60

Gly Gln Leu His Ala Val Val Gly Gly Leu Arg Phe Ala Ala Glu Lys  
65 70 75 80

Phe Phe Phe Ala Ala Ala Val Ala His  
85

<210> 183

<211> 270

<212> DNA

<213> *Neisseria meningitidis*

<400> 183

atgccgtccg actagagcgt cgagttcttt ccagaagtcg tcgtttttga cgggctgttt 60  
ggaggcgggt ttccagccgt tgcgcttcca accgtgtatc cagttttcca tgccattttt 120  
gacgtattgc gagtcggtgc agatgatgac ggtgcagcgg cgtttgagcg atttcagtcc 180  
ttcgaatgac gcagtcagtt ccatgcggtt gttggtggtt tgcgcttcgc cgccgaaaag 240  
ttctttttcg tggctaccgt agcgcaataa 270

<210> 184

<211> 89

<212> PRT

<213> *Neisseria meningitides*

<220>

<221> UNSURE

<222> (5)

<223> Xaa is any amino acid

<400> 184

Met Pro Ser Asp Xaa Ser Val Glu Phe Phe Pro Glu Val Val Val Phe  
1 5 10 15

Asp Gly Leu Phe Gly Gly Gly Phe Pro Ala Val Ala Leu Pro Thr Val  
20 25 30

Tyr Pro Val Phe His Ala Ile Phe Asp Val Leu Arg Val Gly Ala Asp

35                                      40                                      45  
 Asp Asp Gly Ala Ala Ala Phe Glu Arg Phe Gln Ser Phe Asp Asp Gly  
     50                                      55                                      60  
 Ser Gln Phe His Ala Val Val Gly Gly Leu Arg Phe Ala Ala Glu Lys  
     65                                      70                                      75                                      80  
 Phe Phe Phe Val Ala Thr Val Ala His  
                                     85

<210> 185  
 <211> 270  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 185  
 gtgccgtccg accagcgcgt cgagttcttt ccacaagtcg tcgtttttga cgggctgttt 60  
 ggcggcgggt ttccagccgt tgcgcttcca accgtgtatc cagttttcca tgccgttttt 120  
 gacgtattgc gagtcggtgc agatgatgac ggtgcagcgg cgtttgagcg atttcagtcc 180  
 ttcgatgacg gcggtcagtt ccatacgggt gttggtggtt tgcgcttcgc cgccgaaaag 240  
 ttctttttcg tggctgccgt agcgcattaa 270

<210> 186  
 <211> 89  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 186  
 Val Pro Ser Asp Gln Arg Val Glu Phe Phe Pro Gln Val Val Val Phe  
     1                                      5                                      10                                      15  
 Asp Gly Leu Phe Gly Gly Gly Phe Pro Ala Val Ala Leu Pro Thr Val  
           20                                      25                                      30  
 Tyr Pro Val Phe His Ala Val Phe Asp Val Leu Arg Val Gly Ala Asp  
         35                                      40                                      45  
 Asp Asp Gly Ala Ala Ala Phe Glu Arg Phe Gln Ser Phe Asp Asp Gly  
         50                                      55                                      60  
 Gly Gln Phe His Thr Val Val Gly Gly Leu Arg Phe Ala Ala Glu Lys  
         65                                      70                                      75                                      80  
 Phe Phe Phe Val Ala Ala Val Ala His  
                                     85

<210> 187  
 <211> 561  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 187  
 atgtcggcaa tgctgcgtcc gacaagcagc ccgccgcgcc gcgcctgtat gatgaccatc 60

```

cgcacgcggt cgtctgcaaa acgtaaaacc tgcaatgcgc ccgggcagtc tatcaggccg 120
gcaagctggt cggtaacgag ctgttcgggg ctgatggttt cggttatgcc gaatatggaa 180
aggctgccgt tttcgttggt ttcgagcttg gggctgaggt attcgaggta ttcgctggaa 240
cggacgcgcg cgatgcggcc ggggatgttg aacaggtcgg cggcaacttt gcaggcgacg 300
atgttggttt cgtcgctgcg ggagagcgcg agcagcaagt cggcatcttc cgcgccggcg 360
cgttataatg tgaaggggga tgcgcggttg ccgaaaacgg tttggacatc gaggcggctg 420
cctgtttcct gcaatgcttt ttcgtcgatg tcgataacgg ttacgtcgtt gttggtgatg 480
gcggcaaggt tttgcgcgac ggtagaacct acctgcccggt tgccctaaaat gaggattttc 540
acggtatggg tcgccgggtg a 561

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<210> 188

<211> 186

<212> PRT

<213> Neisseria gonorrhoeae

<400> 188

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Met Ser Ala Met Leu Arg Pro Thr Ser Ser Pro Pro Arg Arg Ala Cys
  1              5              10              15

```

```

Met Met Thr Ile Arg Thr Arg Ser Ser Ala Lys Arg Lys Thr Cys Asn
      20              25              30

```

```

Ala Pro Gly Gln Ser Ile Arg Pro Ala Ser Cys Ser Val Thr Ser Cys
      35              40              45

```

```

Ser Gly Leu Met Val Ser Val Met Pro Asn Met Glu Arg Leu Pro Phe
      50              55              60

```

```

Ser Leu Phe Ser Ser Leu Gly Leu Arg Tyr Ser Arg Tyr Ser Leu Glu
      65              70              75              80

```

```

Arg Thr Arg Ala Met Arg Pro Gly Met Leu Asn Arg Ser Ala Ala Thr
      85              90              95

```

```

Leu Gln Ala Thr Met Leu Val Ser Ser Leu Arg Glu Ser Ala Ser Ser
      100             105             110

```

```

Lys Ser Ala Ser Ser Ala Pro Ala Arg Tyr Asn Val Lys Gly Asp Ala
      115             120             125

```

```

Pro Leu Pro Lys Thr Val Trp Thr Ser Arg Arg Leu Pro Val Ser Cys
      130             135             140

```

```

Asn Ala Phe Ser Ser Met Ser Ile Thr Val Thr Ser Leu Leu Val Met
      145             150             155             160

```

```

Ala Ala Arg Phe Cys Ala Thr Val Glu Pro Thr Cys Pro Leu Pro Lys
      165             170             175

```

```

Met Arg Ile Phe Thr Val Trp Val Ala Gly
      180             185

```

<210> 189

<211> 559

<212> DNA

<213> Neisseria meningitidis

<400> 189

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atgtcggaac tgctgcgtcc gacaagcast ccgcrsgcgc gcctgtatga tgaccatccg 60
cacgcggtcg tctgcaaaac gtaaaacctg caatgcgccc gggcagtcta tcaggccggc 120
aagctgttcg gtaacgagct gttcggggct gatggtttcg gttatgccga atatggaaag 180
gctgccgttt tcgttggttt cgagcttggg gctgaggtat tcgaggtatt cgctggaacg 240
gacgcgcgcg atgcggccgg ggatgttgaa caggtcggcg gcaactttgc aggcgacgat 300
gttggtttcg tcgctgcggg agagcgcgag cagcaagtcg gcactctccg cgccggcgcg 360
ttctaattgt aagggggatg cgccgttgcc gaaaacggtt tggacatcga ggcggtgcc 420
tgtttcctgc aatgcttttt cgtcgaatgc gataacggtt acgtcgttgt tgggtatggc 480
ggcaagggtt tgtgcgacgg tagaacctac ctgtccgttg cctaaaatga ggattttcac 540
ggtgtgggtc gccgagtga 559
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<210> 190

<211> 186

<212> PRT

<213> Neisseria meningitides

<220>

<221> UNSURE

<222> (10)

<223> Xaa is any amino acid

<220>

<221> UNSURE

<222> (12)...(13)

<223> Xaa is any amino acid

<400> 190

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Met Ser Ala Met Leu Arg Pro Thr Ser Xaa Pro Xaa Xaa Arg Ala Cys
 1             5             10             15

Met Met Thr Ile Arg Thr Arg Ser Ser Ala Lys Arg Lys Thr Cys Asn
      20             25             30

Ala Pro Gly Gln Ser Ile Arg Pro Ala Ser Cys Ser Val Thr Ser Cys
 35             40             45

Ser Gly Leu Met Val Ser Val Met Pro Asn Met Glu Arg Leu Pro Phe
 50             55             60

Ser Leu Phe Ser Ser Leu Gly Leu Arg Tyr Ser Arg Tyr Ser Leu Glu
 65             70             75             80

Arg Thr Arg Ala Met Arg Pro Gly Met Leu Asn Arg Ser Ala Ala Thr
      85             90             95

Leu Gln Ala Thr Met Leu Val Ser Ser Leu Arg Glu Ser Ala Ser Ser
 100             105             110

Lys Ser Ala Ser Ser Ala Pro Ala Arg Ser Asn Val Lys Gly Asp Ala
 115             120             125

Pro Leu Pro Lys Thr Val Trp Thr Ser Arg Arg Leu Pro Val Ser Cys
 130             135             140
```

Asn Ala Phe Ser Ser Met Ser Ile Thr Val Thr Ser Leu Leu Gly Met  
 145 150 155 160

Ala Ala Arg Phe Cys Ala Thr Val Glu Pro Thr Cys Pro Leu Pro Lys  
 165 170 175

Met Arg Ile Phe Thr Val Trp Val Ala Glu  
 180 185

<210> 191  
 <211> 561  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 191  
 atgtcggcaa tgctgcgtcc gacaagcagt ccgccgcgcc gcgcctgtat gatgaccatc 60  
 cgcacgcggt cgtctgcaaa acgtaaaacc tgcaatgcgc ccgggcagtc tatcaggccg 120  
 gcaagctggt cggtaacgag ctgttcgggg ctgatggttt cggttatgcc gaatatggaa 180  
 aggctgccgt tttcgttgtt ttcgagcttg gggctgaggt attcgaggta ttcgctggaa 240  
 cggacgcgcg cgatgcggcc ggggatgttg aacaggtcgg cggcaacttt gcaggcgacg 300  
 atgttggttt cgtcgtgcg ggagagcgcg agcagcaagt cggcatcttc cgcgccggcg 360  
 cgttctaata tgaaggggga tgcgccgttg ccgaaaacgg tttggacatc gaggcggctg 420  
 cctgtttcct gcaatgcttt ttcgtcgatg tcgataacgg ttacgtcgtt gttgggtatg 480  
 gcggcaaggt tttgtgcgac ggtagaacct acctgtccgt tgcctaaaat gaggattttc 540  
 acggtgtggg tcgccgagtg a 561

<210> 192  
 <211> 186  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 192  
 Met Ser Ala Met Leu Arg Pro Thr Ser Ser Pro Pro Arg Arg Ala Cys  
 1 5 10 15  
 Met Met Thr Ile Arg Thr Arg Ser Ser Ala Lys Arg Lys Thr Cys Asn  
 20 25 30  
 Ala Pro Gly Gln Ser Ile Arg Pro Ala Ser Cys Ser Val Thr Ser Cys  
 35 40 45  
 Ser Gly Leu Met Val Ser Val Met Pro Asn Met Glu Arg Leu Pro Phe  
 50 55 60  
 Ser Leu Phe Ser Ser Leu Gly Leu Arg Tyr Ser Arg Tyr Ser Leu Glu  
 65 70 75 80  
 Arg Thr Arg Ala Met Arg Pro Gly Met Leu Asn Arg Ser Ala Ala Thr  
 85 90 95  
 Leu Gln Ala Thr Met Leu Val Ser Ser Leu Arg Glu Ser Ala Ser Ser  
 100 105 110



Lys Ser Ala Ser Ser Ala Pro Ala Arg Ser Asn Val Lys Gly Asp Ala  
 115 120 125

Pro Leu Pro Lys Thr Val Trp Thr Ser Arg Arg Leu Pro Val Ser Cys  
 130 135 140

Asn Ala Phe Ser Ser Met Ser Ile Thr Val Thr Ser Leu Leu Gly Met  
 145 150 155 160

Ala Ala Arg Phe Cys Ala Thr Val Glu Pro Thr Cys Pro Leu Pro Lys  
 165 170 175

Met Arg Ile Phe Thr Val Trp Val Ala Glu  
 180 185

<210> 193

<211> 930

<212> DNA

<213> Neisseria gonorrhoeae

<400> 193

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 gcccaagatt tgcccgacgg ggccgactgc caaatctgcg ccgtttaccg caacaaccgc 120  
 ctcatcgccc ccgcgccgca aaccgtcatc atcgaaggcg acgaaatcct gtttgccgcc 180  
 gccgccgaaa acatcggggc ggtcataccc gaattgcgcc ccaaagaaac cagcaccgcg 240  
 cgcacatcatg ttgccggcgg cggaacatc tgctaccgcc tcgccaagca gctcgaacac 300  
 gcatacaacg tcaaaatcat cgaatgccgg ccgcgccgtg ccgaatggat agccgaaaac 360  
 ctgcacaaca ccctcgtcct gcaagggttcg gcaaccgacg aaaccctgct cgacaacgaa 420  
 tacatcgacg aaatcgacgt attctgcgcc ctgaccaacg acgacgaaag caacattatg 480  
 tccgcccttt tggcgaaaaa cctcggcgcg aagcgcgtca tcggcatcgt caaccgctca 540  
 agctacgtcg atttgctcga aggcaacaaa atcgacatcg tcgtctcccc ccacctcatc 600  
 accatcggtc cgatactcgc ccacatccgg cgcggcgaca tcgttgccgt ccaccccatc 660  
 cggcgcgcca cggcggaagc catcgaagtc gtgcgcgacg gcgacaaaaa aacttcgcc 720  
 atcatcgcca ggccgcatcag cggcatcaaa tggcccgaag gctgccacat tgccgccgtc 780  
 gtccgcgccg gaaccggcga aaccattatg ggacaccata ccgaaaccgt catccaagac 840  
 ggtgaccaca tcattctttt cgtctcgcgc cggcgcatcc tgaacgaact ggagaaactc 900  
 atccaagtca aaatgggctt ttccgataa 930

<210> 194

<211> 309

<212> PRT

<213> Neisseria gonorrhoeae

<400> 194

Met Val Ile Ile Gln Ala Arg Arg Gly Gly Leu Leu Val Gly Arg Ser  
 1 5 10 15

Ile Ala Asp Ile Ala Gln Asp Leu Pro Asp Gly Ala Asp Cys Gln Ile  
 20 25 30

Cys Ala Val Tyr Arg Asn Asn Arg Leu Ile Val Pro Ala Pro Gln Thr  
 35 40 45

Val Ile Ile Glu Gly Asp Glu Ile Leu Phe Ala Ala Ala Ala Glu Asn  
 50 55 60

Ile Gly Ala Val Ile Pro Glu Leu Arg Pro Lys Glu Thr Ser Thr Arg  
 65 70 75 80  
 Arg Ile Met Ile Ala Gly Gly Gly Asn Ile Cys Tyr Arg Leu Ala Lys  
 85 90 95  
 Gln Leu Glu His Ala Tyr Asn Val Lys Ile Ile Glu Cys Arg Pro Arg  
 100 105 110  
 Arg Ala Glu Trp Ile Ala Glu Asn Leu Asp Asn Thr Leu Val Leu Gln  
 115 120 125  
 Gly Ser Ala Thr Asp Glu Thr Leu Leu Asp Asn Glu Tyr Ile Asp Glu  
 130 135 140  
 Ile Asp Val Phe Cys Ala Leu Thr Asn Asp Asp Glu Ser Asn Ile Met  
 145 150 155 160  
 Ser Ala Leu Leu Ala Lys Asn Leu Gly Ala Lys Arg Val Ile Gly Ile  
 165 170 175  
 Val Asn Arg Ser Ser Tyr Val Asp Leu Leu Glu Gly Asn Lys Ile Asp  
 180 185 190  
 Ile Val Val Ser Pro His Leu Ile Thr Ile Gly Ser Ile Leu Ala His  
 195 200 205  
 Ile Arg Arg Gly Asp Ile Val Ala Val His Pro Ile Arg Arg Gly Thr  
 210 215 220  
 Ala Glu Ala Ile Glu Val Val Ala His Gly Asp Lys Lys Thr Ser Ala  
 225 230 235 240  
 Ile Ile Gly Arg Arg Ile Ser Gly Ile Lys Trp Pro Glu Gly Cys His  
 245 250 255  
 Ile Ala Ala Val Val Arg Ala Gly Thr Gly Glu Thr Ile Met Gly His  
 260 265 270  
 His Thr Glu Thr Val Ile Gln Asp Gly Asp His Ile Ile Phe Phe Val  
 275 280 285  
 Ser Arg Arg Arg Ile Leu Asn Glu Leu Glu Lys Leu Ile Gln Val Lys  
 290 295 300  
 Met Gly Phe Phe Gly  
 305

<210> 195

<211> 937

<212> DNA

<213> *Neisseria meningitidis*

<400> 195

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atggtcatca tacaggcgcg csygcggast gcttgtcgga cgcagcattg ccgacatcgc 60
ccaagatttg cccgacgggg ccgactgcca aatctgcgcc gtttaccgca acaaccgcct 120
catcgtcccc gcgcgcgaaa ccgtcatcat cgaaggcgac gaaatcctat ttgccgcgc 180
cgccgaaaac atcggcgcgg tcatacccga attgcgcccc aaagaaaccc aaagaaacca 240
gcccgmgmngc atcatgattk ccggcgggcg caacatcggc taccgtctcg ccaagcagct 300
cgaacacgca tacaacgtya aaatcatcga atgccggccg cgccgtgccg aatggatagc 360
cgaaaacctc gacaacaccc tcgtcytgca aggttcggca accgacgaaa ccctgctcga 420
caacgaatac atcgacgaaa tcgacgtatt ctgcgccctg accaacgacg acgaaagcaa 480
cattatgtcc gcccttttgg cgaaaaacct cggcgcgaa ggcgtcatcg gcatcgtcaa 540
ccgctcaagc tacgtcgatt tgctcgaagg caacaaaatc gacatcgtcg tctcccccca 600
cctcatcacc atcggctcga tactcgcca catccggcgc ggcgacatcg ttgccgtcca 660
ccccatccgg cgcggcacgg cggaagccat cgaagtcgtc gcacacggcg acaaaaaaac 720
ttccgccatc atcggcaggg gcatcagcgg catcaaattg cccgaaggct gccacattgc 780
cgccgtcgtc cgcgccggaa ccggcgaaaac cattatggga caccataccg aaaccgtcat 840
ccaagacggc gaccacatca tctttttcgt ctgcgcggcg cgcatactga acgaactgga 900
aaaactcatc cagggtcaaaa tgggcttttt cgataa 937

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<210> 196
<211> 312
<212> PRT
<213> Neisseria meningitides

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<220>
<221> UNSURE
<222> (8)....(9)
<223> Xaa is any amino acid

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<220>
<221> UNSURE
<222> (11)
<223> Xaa is any amino acid

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<220>
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<222> (83)....(84)
<223> Xaa is any amino acid

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<220>
<221> UNSURE
<222> (88)
<223> Xaa is any amino acid

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<400> 196
Met Val Ile Ile Gln Ala Arg Xaa Xaa Gly Xaa Leu Val Gly Arg Ser
  1             5             10             15

Ile Ala Asp Ile Ala Gln Asp Leu Pro Asp Gly Ala Asp Cys Gln Ile
  20             25             30

Cys Ala Val Tyr Arg Asn Asn Arg Leu Ile Val Pro Ala Pro Gln Thr
  35             40             45

Val Ile Ile Glu Gly Asp Glu Ile Leu Phe Ala Ala Ala Glu Asn
  50             55             60

Ile Gly Ala Val Ile Pro Glu Leu Arg Pro Lys Glu Thr Gln Arg Asn

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65	70	75	80
Gln Pro Xaa Xaa Ile Met Ile Xaa Gly Gly Gly Asn Ile Gly Tyr Arg	85	90	95
Leu Ala Lys Gln Leu Glu His Ala Tyr Asn Val Lys Ile Ile Glu Cys	100	105	110
Arg Pro Arg Arg Ala Glu Trp Ile Ala Glu Asn Leu Asp Asn Thr Leu	115	120	125
Val Leu Gln Gly Ser Ala Thr Asp Glu Thr Leu Leu Asp Asn Glu Tyr	130	135	140
Ile Asp Glu Ile Asp Val Phe Cys Ala Leu Thr Asn Asp Asp Glu Ser	145	150	155
Asn Ile Met Ser Ala Leu Leu Ala Lys Asn Leu Gly Ala Lys Arg Val	165	170	175
Ile Gly Ile Val Asn Arg Ser Ser Tyr Val Asp Leu Leu Glu Gly Asn	180	185	190
Lys Ile Asp Ile Val Val Ser Pro His Leu Ile Thr Ile Gly Ser Ile	195	200	205
Leu Ala His Ile Arg Arg Gly Asp Ile Val Ala Val His Pro Ile Arg	210	215	220
Arg Gly Thr Ala Glu Ala Ile Glu Val Val Ala His Gly Asp Lys Lys	225	230	235
Thr Ser Ala Ile Ile Gly Arg Arg Ile Ser Gly Ile Lys Trp Pro Glu	245	250	255
Gly Cys His Ile Ala Ala Val Val Arg Ala Gly Thr Gly Glu Thr Ile	260	265	270
Met Gly His His Thr Glu Thr Val Ile Gln Asp Gly Asp His Ile Ile	275	280	285
Phe Phe Val Ser Arg Arg Arg Ile Leu Asn Glu Leu Glu Lys Leu Ile	290	295	300
Gln Val Lys Met Gly Phe Phe Gly	305	310	

<210> 197

<211> 930

<212> DNA

<213> Neisseria meningitidis

<400> 197

atggtcatca tacaggcgcg gcgcggcgga ctgcttgctg gacgcagcat tgccgacatc 60  
gcccaagatt tgcccgcagg ggccgactgc caaatctgcg ccgtttaccg caacaaccgc 120

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ctcatcgctcc ccgcgcgcga aaccgtcatc atcgaaggcg acgaaatcct atttgccgcc 180
gccgccgaaa acatcggcgc ggtcataccc gaattgcgcc ccaaagaaac cagcaccgcg 240
cgcacatga ttgccggcgg cggcaacatc ggctaccgtc tcgccaagca gctcgaacac 300
gcatacaacg tcaaaatcat cgaatgccgg ccgcgccgtg ccgaatggat agccgaaaac 360
ctcgacaaca ccctcgtcct gcaaggttcg gcaaccgacg aaaccctgct cgacaacgaa 420
tacatcgacg aaatcgacgt attctgcgcc ctgaccaacg acgacgaaag caacattatg 480
tccgcccttt tggcgaaaaa cctcggcgcg aagcgcgtca tcggcatcgt caaccgctca 540
agctacgtcg atttgctcga aggcaacaaa atcgacatcg tcgtctcccc ccacctcatc 600
accatcggct cgatactcgc ccacatccgg cgcggcgaca tcgttgccgt ccaccccatc 660
cggcgcggca cggcggaagc catcgaagtc gtcgcacacg gcgacaaaaa aacttcgcc 720
atcatcggca ggcgcacag cggcatcaaa tggcccgaag gctgccacat tgccgccgtc 780
gtccgcgcgg gaaccggcga aaccattatg ggacaccata ccgaaaccgt catccaagac 840
ggcgaccaca tcatcttttt cgtctcgcgc cggcgcaccc tgaacgaact ggaaaaactc 900
atccaagtca aaatgggctt tttcgataa 930

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<210> 198

<211> 309

<212> PRT

<213> *Neisseria meningitidis*

<400> 198

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Met Val Ile Ile Gln Ala Arg Arg Gly Gly Leu Leu Val Gly Arg Ser
  1             5             10             15

Ile Ala Asp Ile Ala Gln Asp Leu Pro Asp Gly Ala Asp Cys Gln Ile
      20             25             30

Cys Ala Val Tyr Arg Asn Asn Arg Leu Ile Val Pro Ala Pro Gln Thr
      35             40             45

Val Ile Ile Glu Gly Asp Glu Ile Leu Phe Ala Ala Ala Ala Glu Asn
      50             55             60

Ile Gly Ala Val Ile Pro Glu Leu Arg Pro Lys Glu Thr Ser Thr Arg
      65             70             75             80

Arg Ile Met Ile Ala Gly Gly Gly Asn Ile Gly Tyr Arg Leu Ala Lys
      85             90             95

Gln Leu Glu His Ala Tyr Asn Val Lys Ile Ile Glu Cys Arg Pro Arg
      100            105            110

Arg Ala Glu Trp Ile Ala Glu Asn Leu Asp Asn Thr Leu Val Leu Gln
      115            120            125

Gly Ser Ala Thr Asp Glu Thr Leu Leu Asp Asn Glu Tyr Ile Asp Glu
      130            135            140

Ile Asp Val Phe Cys Ala Leu Thr Asn Asp Asp Glu Ser Asn Ile Met
      145            150            155            160

Ser Ala Leu Leu Ala Lys Asn Leu Gly Ala Lys Arg Val Ile Gly Ile
      165            170            175

Val Asn Arg Ser Ser Tyr Val Asp Leu Leu Glu Gly Asn Lys Ile Asp
      180            185            190

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Ile Val Val Ser Pro His Leu Ile Thr Ile Gly Ser Ile Leu Ala His  
195 200 205

Ile Arg Arg Gly Asp Ile Val Ala Val His Pro Ile Arg Arg Gly Thr  
210 215 220

Ala Glu Ala Ile Glu Val Val Ala His Gly Asp Lys Lys Thr Ser Ala  
225 230 235 240

Ile Ile Gly Arg Arg Ile Ser Gly Ile Lys Trp Pro Glu Gly Cys His  
245 250 255

Ile Ala Ala Val Val Arg Ala Gly Thr Gly Glu Thr Ile Met Gly His  
260 265 270

His Thr Glu Thr Val Ile Gln Asp Gly Asp His Ile Ile Phe Phe Val  
275 280 285

Ser Arg Arg Arg Ile Leu Asn Glu Leu Glu Lys Leu Ile Gln Val Lys  
290 295 300

Met Gly Phe Phe Gly  
305

<210> 199

<211> 453

<212> DNA

<213> Neisseria gonorrhoeae

<400> 199

atgctcgaca aaggcgagga gttgcccgtc gatttcacca accgcctgat ttactacgtc 60  
ggccccgtcg atccggtcgg cgatgaagtc gtcggtcccg caggtcgcac cacagccacc 120  
cgcatggaca aatttaccgg ccaaagtctc aaacaaaccg gcctcttggg catgatcggc 180  
aaatccgagc gcggcgcggc cacctgcgaa gccatcgccg acaacaaggc cgtgtacctc 240  
atggcagtcg gcggcgcggc atacctcgtg gcaaaagcca tcaaattctc caaagtcttg 300  
gcgttccccg aattgggtat ggaagccgtt tacgaatttg aagtcaaaga tatgcccgtg 360  
accgtcgccg tggacagcaa aggcgaatcc atccacgcca ccgccccgcg caaatggcag 420  
gcgaaaatcg gcatcatccc cgtcgagtct tga 453

<210> 200

<211> 150

<212> PRT

<213> Neisseria gonorrhoeae

<400> 200

Met Leu Asp Lys Gly Glu Glu Leu Pro Val Asp Phe Thr Asn Arg Leu  
1 5 10 15

Ile Tyr Tyr Val Gly Pro Val Asp Pro Val Gly Asp Glu Val Val Gly  
20 25 30

Pro Ala Gly Pro Thr Thr Ala Thr Arg Met Asp Lys Phe Thr Arg Gln  
35 40 45

Met Leu Lys Gln Thr Gly Leu Leu Gly Met Ile Gly Lys Ser Glu Arg  
 50 55 60

Gly Ala Ala Thr Cys Glu Ala Ile Ala Asp Asn Lys Ala Val Tyr Leu  
 65 70 75 80

Met Ala Val Gly Gly Ala Ala Tyr Leu Val Ala Lys Ala Ile Lys Ser  
 85 90 95

Ser Lys Val Leu Ala Phe Pro Glu Leu Gly Met Glu Ala Val Tyr Glu  
 100 105 110

Phe Glu Val Lys Asp Met Pro Val Thr Val Ala Val Asp Ser Lys Gly  
 115 120 125

Glu Ser Ile His Ala Thr Ala Pro Arg Lys Trp Gln Ala Lys Ile Gly  
 130 135 140

Ile Ile Pro Val Glu Ser  
 145 150

<210> 201

<211> 453

<212> DNA

<213> Neisseria meningitidis

<400> 201

atgtctcaaca aaggcgaaga attgcccgtc gatttcacca accgcctgat ttactacgtc 60  
 ggccccgtcg atccgggtcgg cgatgaagtc gtcgggtccgg cagggtccgac cacagccacc 120  
 cgcattggaca aattcaccgg ccaaattgctc gaacaaaccg acctcttggg catgatcggc 180  
 aaatccgagc gcggcgtggc cacctgcgaa gccatcgccg acaacaaagc cgtgtacctc 240  
 atggcagtcg gcggcgcggc gtatctcgtg gcaaaagcca tcaaattctt caaagtcttg 300  
 gcgttccccg aattgggcat ggaagccatt tacgaatttg aagtcaaaga catgcccgtg 360  
 accgtcgccg tagatagcaa aggcgaatcc atccacgcca ccgccccgcg caaatggcag 420  
 gcgaaaatcg gcatcatccc cgtcgaatct tga 453

<210> 202

<211> 150

<212> PRT

<213> Neisseria meningitidis

<400> 202

Met Leu Asn Lys Gly Glu Glu Leu Pro Val Asp Phe Thr Asn Arg Leu  
 1 5 10 15

Ile Tyr Tyr Val Gly Pro Val Asp Pro Val Gly Asp Glu Val Val Gly  
 20 25 30

Pro Ala Gly Pro Thr Thr Ala Thr Arg Met Asp Lys Phe Thr Arg Gln  
 35 40 45

Met Leu Glu Gln Thr Asp Leu Leu Gly Met Ile Gly Lys Ser Glu Arg  
 50 55 60

Gly Val Ala Thr Cys Glu Ala Ile Ala Asp Asn Lys Ala Val Tyr Leu





Ser Lys Val Leu Ala Phe Pro Glu Leu Gly Met Glu Ala Ile Tyr Glu  
100 105 110

Phe Glu Val Lys Asp Met Pro Val Thr Val Ala Val Asp Ser Lys Gly  
115 120 125

Glu Ser Ile His Ala Thr Ala Pro Pro Gln Trp Gln Ala Lys Ile Gly  
130 135 140

Ile Ile Pro Val Lys Ser  
145 150

<210> 205

<211> 420

<212> DNA

<213> Neisseria gonorrhoeae

<400> 205

atgcggggcgc aggcgtttga tcaaccgttc ggtagctcc tgttcggaca ggcagaacac 60  
ttcgcgcggg ttgacggctt tcgggttcag gatattgatt tggacgggca tcaacgcctc 120  
ttccgcaccg ccttcgccgt ttccgcgaac cccgtctgcc gccgtaccg attctgccgc 180  
atcgcggttt tccccgccct caatctgtgc gggttcaaatt cggcactgt cttttttggc 240  
atcgaaccgg attctccgcc gcgattcgat gtgtttttcc gaaaccggca ttgcagggga 300  
agcctgcgcg ttgagccagt ttccctgaag gacgatcatc gggtcgggtt cgacttcctc 360  
gccgcaatcg gcaacggcgc tgttgtgttc ttctgccat ttcttcagat acgcctttaa 420

<210> 206

<211> 139

<212> PRT

<213> Neisseria gonorrhoeae

<400> 206

Met Arg Ala Gln Ala Phe Asp Gln Pro Phe Gly Gln Leu Leu Phe Gly  
1 5 10 15

Gln Ala Glu His Phe Ala Pro Val Asp Gly Phe Arg Val Gln Asp Ile  
20 25 30

Asp Leu Asp Gly His Gln Arg Leu Phe Arg Thr Ala Phe Ala Val Phe  
35 40 45

Arg Asn Pro Val Cys Arg Arg Thr Gly Phe Cys Arg Ile Gly Val Phe  
50 55 60

Pro Ala Leu Asn Leu Cys Gly Phe Lys Phe Gly Thr Val Phe Phe Gly  
65 70 75 80

Ile Glu Pro Asp Ser Pro Pro Arg Phe Asp Val Phe Phe Arg Asn Arg  
85 90 95

His Leu Gln Gly Ser Leu Arg Val Glu Pro Val Phe Leu Lys Asp Asp  
100 105 110

His Arg Val Gly Phe Asp Phe Leu Ala Ala Ile Gly Asn Gly Ala Val

115

120

125

Val Phe Phe Leu Pro Phe Leu Gln Ile Arg Leu  
 130 135

&lt;210&gt; 207

&lt;211&gt; 417

&lt;212&gt; DNA

<213> *Neisseria gonorrhoeae*

&lt;400&gt; 207

atgcggggcgc aggcgtttga tcagccgttc ggtcagctcc tgttcggaca ggcagaacac 60  
 ttccgcgccgg ttgacggctt tcgggttcag gatattgatt tggacgggca tcaacgtttc 120  
 ttccgcatcg ttttccccgt tttccgaaac cgccggctca ttcgtgccgg attctgcctc 180  
 gtcggcggtt tccccgctt caatctgtcc ggtttcaaat tcgacactgt cttttttggt 240  
 atcaaaccgg attctccgcc gcgattcgat gtgtttttcc gaaaccgaca tttgcaggga 300  
 agcctgcgcg ttgagccagt tttcctgaag gacgatcatc gggtcgggtt cgacttcctc 360  
 gccgcaatcg gcaacggcgg cattgtgttc ctctgccat tttttcagat acgcctt 417

&lt;210&gt; 208

&lt;211&gt; 139

&lt;212&gt; PRT

<213> *Neisseria meningitidis*

&lt;400&gt; 208

Met Arg Ala Gln Ala Phe Asp Gln Pro Phe Gly Gln Leu Leu Phe Gly  
 1 5 10 15

Gln Ala Glu His Phe Ala Pro Val Asp Gly Phe Arg Val Gln Asp Ile  
 20 25 30

Asp Leu Asp Gly His Gln Arg Phe Phe Arg Ile Val Phe Pro Val Phe  
 35 40 45

Arg Asn Arg Arg Leu Ile Arg Ala Gly Phe Cys Leu Val Gly Val Phe  
 50 55 60

Pro Ala Phe Asn Leu Ser Gly Phe Lys Phe Asp Thr Val Phe Phe Gly  
 65 70 75 80

Ile Lys Pro Asp Ser Pro Pro Arg Phe Asp Val Phe Phe Arg Asn Arg  
 85 90 95

His Leu Gln Gly Ser Leu Arg Val Glu Pro Val Phe Leu Lys Asp Asp  
 100 105 110

His Arg Val Gly Phe Asp Phe Leu Ala Ala Ile Gly Asn Gly Gly Ile  
 115 120 125

Val Phe Leu Leu Pro Phe Phe Gln Ile Arg Leu  
 130 135

&lt;210&gt; 209

<211> 417  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 209  
 atgcggggcgc aggcggtttga tcagccgttc ggtcagctcc tgttcggaca ggcagaacac 60  
 ttcgcgccgg ttgacggctt tcgggttcag aatattgatt tggacgggca tcaacgcttc 120  
 ttccgcaccg ccttcgccgt tttccgcaac cccgtctgcc gcgtaccg attctgccgc 180  
 atcggcggtt tccccgcctt caatctgtcc ggtttcaa atcggcactgt cttttttggc 240  
 atcaaaccgg attctccgcc gcgattcgat gtgtttttcc gaaaccgaca ttgacaggga 300  
 agcctgcgcg ttgagccagt tttcctgaag gacgatcatc gggtcgggtt cgacttcctc 360  
 gccgcaatcg gcaacggcgg cattgtgttc ctctgccat tttttcagat acgcctt 417

<210> 210  
 <211> 139  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 210  
 Met Arg Ala Gln Ala Phe Asp Gln Pro Phe Gly Gln Leu Leu Phe Gly  
 1 5 10 15  
 Gln Ala Glu His Phe Ala Pro Val Asp Gly Phe Arg Val Gln Asn Ile  
 20 25 30  
 Asp Leu Asp Gly His Gln Arg Phe Phe Arg Thr Ala Phe Ala Val Phe  
 35 40 45  
 Arg Asn Pro Val Cys Arg Arg Thr Arg Phe Cys Arg Ile Gly Val Phe  
 50 55 60  
 Pro Ala Phe Asn Leu Ser Gly Phe Lys Phe Gly Thr Val Phe Phe Gly  
 65 70 75 80  
 Ile Lys Pro Asp Ser Pro Pro Arg Phe Asp Val Phe Phe Arg Asn Arg  
 85 90 95  
 His Leu Gln Gly Ser Leu Arg Val Glu Pro Val Phe Leu Lys Asp Asp  
 100 105 110  
 His Arg Val Gly Phe Asp Phe Leu Ala Ala Ile Gly Asn Gly Gly Ile  
 115 120 125  
 Val Phe Leu Leu Pro Phe Phe Gln Ile Arg Leu  
 130 135

<210> 211  
 <211> 384  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 211  
 atgggcgcgg gctgggtgtcc tcccggcatc ttgggcatcg gcatcggcgg caccgccgaa 60  
 aaagccgtgt tgatggcaaa agaatccctg atgagccaca tcgacatcca agaattgcag 120

gaaaaagccg cgtccggggc ggaattgtcc accaccgaag ccctgcgcct cgaactcttt 180

gaaaagggtca acgcgctggg catcggcgcg caaggcttgg gcggtctgac caccgtgttg 240  
gacgtgaaaa tcctcgatta cccgacccat gccgcctcca aaccgattgc catgattccc 300  
aactgtgccg ccaccgcca cgtcgaattt gaattggacg gtcagggtcc tgtcgaactc 360  
acgccgccgc gtgtcgaaga ctga 384

<210> 212

<211> 127

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 212

Met Gly Ala Gly Trp Cys Pro Pro Gly Ile Leu Gly Ile Gly Ile Gly  
1 5 10 15

Gly Thr Pro Glu Lys Ala Val Leu Met Ala Lys Glu Ser Leu Met Ser  
20 25 30

His Ile Asp Ile Gln Glu Leu Gln Glu Lys Ala Ala Ser Gly Ala Glu  
35 40 45

Leu Ser Thr Thr Glu Ala Leu Arg Leu Glu Leu Phe Glu Lys Val Asn  
50 55 60

Ala Leu Gly Ile Gly Ala Gln Gly Leu Gly Gly Leu Thr Thr Val Leu  
65 70 75 80

Asp Val Lys Ile Leu Asp Tyr Pro Thr His Ala Ala Ser Lys Pro Ile  
85 90 95

Ala Met Ile Pro Asn Cys Ala Ala Thr Arg His Val Glu Phe Glu Leu  
100 105 110

Asp Gly Ser Gly Pro Val Glu Leu Thr Pro Pro Arg Val Glu Asp  
115 120 125

<210> 213

<211> 393

<212> DNA

<213> *Neisseria meningitidis*

<400> 213

atggggcgcg gctggtgtcc tcccggcatc ttgggtatcg gcatcggcgg cagccgaaaa 60  
agccgtgctg atggcaaaaag agtccctgat gagccacatc gacattcaag aattgcagga 120  
aaaggcgcg tccggcgcg aattgtccac caccgaagcc ctgcgcctcg aactctttga 180  
aaaagtcaac gcgctggg0c atcgggcgcac aaggcttggg cggactgacc accgtgttg 240  
acgtgaaaaat cctcgattat ccgaccacg ccgcctocaa accgattgcc atgattccg0 300  
aactgcgcg ccaccgcca cgtcgaattt gaattggacg gtcaggccc tgtcgaactc 360  
acgccgccgc gcgtcgaaga tggcccatt tga 393

<210> 214

<211> 130

<212> PRT

<213> Neisseria meningitidis

<400> 214

Met Gly Ala Gly Trp Cys Pro Pro Gly Ile Leu Gly Ile Gly Ile Gly  
1 5 10 15

Gly Xaa Ala Glu Lys Ala Val Leu Met Ala Lys Glu Ser Leu Met Ser  
20 25 30

His Ile Asp Ile Gln Glu Leu Gln Glu Lys Ala Ala Ser Gly Ala Glu  
35 40 45

Leu Ser Thr Thr Glu Ala Leu Arg Leu Glu Leu Phe Glu Lys Val Asn  
50 55 60

Ala Leu Gly Ile Gly Ala Gln Gly Leu Gly Gly Leu Thr Thr Val Leu  
65 70 75 80

Asp Val Lys Ile Leu Asp Tyr Pro Thr His Ala Ala Ser Lys Pro Ile  
85 90 95

Ala Met Ile Pro Asn Cys Ala Ala Thr Arg His Val Glu Phe Glu Leu  
100 105 110

Asp Gly Ser Gly Pro Val Glu Leu Thr Pro Pro Arg Val Glu Asp Gly  
115 120 125

Pro Ile  
130

<210> 215

<211> 387

<212> DNA

<213> Neisseria meningitidis

<400> 215

atgggcgcgg gctggtgtcc tcccggcatc ttgggcatcg gcatcggcgg tacgcccga 60  
aaagccgtgt tgaatgccaa agaatccctg atgagccaca tcgacatcca agaattgcag 120  
gaaaaagccg cgtccggcgc ggaattgtcc accaccgaag ccctgcgcct cgaactcttt 180  
gaaaaagtca acgcgctagg catcggcgcg caaggcttgg gcggtctgac caccgtgttg 240  
gacgtgaaaa tctcgtatta cccgaccac gccgcctcca aaccgattgc catgattccg 300  
aactgcgccg ccaccgccca cgtcgaattt gaattggacg gctcaggccc tgcgaactc 360  
acgccgccgc gcgtcgaaga ctggccc 387

<210> 216

<211> 129

<212> PRT

<213> Neisseria meningitidis

<400> 216

Met Gly Ala Gly Trp Cys Pro Pro Gly Ile Leu Gly Ile Gly Ile Gly  
1 5 10 15

Gly Thr Pro Glu Lys Ala Val Leu Met Ala Lys Glu Ser Leu Met Ser  
20 25 30

His Ile Asp Ile Gln Glu Leu Gln Glu Lys Ala Ala Ser Gly Ala Glu  
 35 40 45  
 Leu Ser Thr Thr Glu Ala Leu Arg Leu Glu Leu Phe Glu Lys Val Asn  
 50 55 60  
 Ala Leu Gly Ile Gly Ala Gln Gly Leu Gly Gly Leu Thr Thr Val Leu  
 65 70 75 80  
 Asp Val Lys Ile Leu Asp Tyr Pro Thr His Ala Ala Ser Lys Pro Ile  
 85 90 95  
 Ala Met Ile Pro Asn Cys Ala Ala Thr Arg His Val Glu Phe Glu Leu  
 100 105 110  
 Asp Gly Ser Gly Pro Val Glu Leu Thr Pro Pro Arg Val Glu Asp Trp  
 115 120 125

Pro

<210> 217

<211> 1524

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 217

atgaccgtta tcaagcaaga agactttatt caaagtatct gcgatgcctt ccaattcatc 60  
 agctactacc atccaaaaga ctacatcgac gcgctttata aggcgtggca gaaggaagaa 120  
 aatcccgcgc ccaaagacgc gatgacgcag attttggtca acagccgtat gtgtgccgaa 180  
 aacaaccgcc ccatctgcc aagacacaggt atcgcaaccg tcttccctcaa agtcggtatg 240  
 gatgtgcaat gggatgcgga catgagcgtg gaaaagatgg ttaacgaagg cgtacgccgc 300  
 gcctacactt gggaaggcaa caccctgcgc gcttccgtcc tcgccgatcc ggccggcaaa 360  
 cgccaaaaca ccaaagacaa cacccccgc gtcattccaca tgagcatcgt gccgggcggt 420  
 aaagtcgaag taacctgcgc ggcaaaaggc ggcggtctctg aaaacaaatc caaactcgt 480  
 atgctcaacc cttccgacaa catcgtcgat tgggtattga aaacctccc gacgatgggc 540  
 gcgggctggt gtctcccgc catcttgggc atcggcacgc gcggcacgcc cgaaaaagcc 600  
 gtgttgatgg cgaaagaatc cctgatgagc cacatcgaca tccaagaatt gcaggaaaaa 660  
 gccgcgtccg gcgcggaatt gtccaccacc gaagccctgc gcctcgaact ctttgaaaag 720  
 gtcaacgcgc tgggcatcgc cgcgcaaggc ttgggcggtc tgaccaccgt gttggacgtg 780  
 aaaatcctcg attaccgcgc ccatgccgcc tccaaaccga ttgccatgat tcccaactgt 840  
 gccgccaccc gccacgtcga atttgaattg gacggctcag gtctgtcga actcacgccg 900  
 ccgcgcgtcg aagactgacc cgatctgact tacagccccg acaacggcaa acgcgtcgat 960  
 gtcgataagc tgaccaaaga agaagtggca agctggaaaa ccggcgacgt attgctgttg 1020  
 aacggcaaaa tcctcacccg ccgcgatgcc gcgcacaaac gcctcgtcaa tatgctcgac 1080  
 aaaggcgagg agttgcccggt cgatttcacc aaccgcctga ttactacgt cggccccgtc 1140  
 gatccgggtc gcgatgaagt cgtcgtgcc gcaggtccga ccacagccac ccgcatggac 1200  
 aaatttacc 'gccaatgct caaacaaccc ggctcttg gcatgatcgg caaatccgag 1260  
 ccgcggcgcg ccacctgcga agccatcgcc gacaacaagg ccgtgtacct catggcagtc 1320  
 ggccggcgcg catacctcgt ggcaaaagcc atcaaatctt ccaaagtctt ggcggtcccc 1380  
 gaattgggta tgggaagcgt ttacgaattt gaagtcaaag atatgcccg aaccgtcgcc 1440  
 gtggacagca aaggcgaatc catccacgcc accgccccgc gcaaatggca ggcgaaaatc 1500  
 ggcatcatcc ccgtcagatc ttga 1524



Pro Ile Ala Met Ile Pro Asn Cys Ala Ala Thr Arg His Val Glu Phe  
 275 280 285  
 Glu Leu Asp Gly Ser Gly Pro Val Glu Leu Thr Pro Pro Arg Val Glu  
 290 300  
 Asp Pro Asp Leu Thr Tyr Ser Pro Asp Asn Gly Lys Arg Val Asp Val  
 305 310 315 320  
 Asp Lys Leu Thr Lys Glu Glu Val Ala Ser Trp Lys Thr Gly Asp Val  
 325 330 335  
 Leu Leu Leu Asn Gly Lys Ile Leu Thr Gly Arg Asp Ala Ala His Lys  
 340 345 350  
 Arg Leu Val Asn Met Leu Asp Lys Gly Glu Glu Leu Pro Val Asp Phe  
 355 360 365  
 Thr Asn Arg Leu Ile Tyr Tyr Val Gly Pro Val Asp Pro Val Gly Asp  
 370 375 380  
 Glu Val Val Gly Pro Ala Gly Pro Thr Thr Ala Thr Arg Met Asp Lys  
 385 390 395 400  
 Phe Thr Arg Gln Met Leu Lys Gln Thr Gly Leu Leu Gly Met Ile Gly  
 405 410 415  
 Lys Ser Glu Arg Gly Ala Ala Thr Cys Glu Ala Ile Ala Asp Asn Lys  
 420 425 430  
 Ala Val Tyr Leu Met Ala Val Gly Gly Ala Ala Tyr Leu Val Ala Lys  
 435 440 445  
 Ala Ile Lys Ser Ser Lys Val Leu Ala Phe Pro Glu Leu Gly Met Glu  
 450 455 460  
 Ala Val Tyr Glu Phe Glu Val Lys Asp Met Pro Val Thr Val Ala Val  
 465 470 475 480  
 Asp Ser Lys Gly Glu Ser Ile His Ala Thr Ala Pro Arg Lys Trp Gln  
 485 490 495  
 Ala Lys Ile Gly Ile Ile Pro Val Glu Ser  
 500 505

<210> 219

<211> 1524

<212> DNA

<213> Neisseria meningitidis

<400> 219

atgaccgtca tcaaacagga agactttatc caaagcattt gcgatgcctt ccaattcatc 60  
 agctactatc atcccaaaga ctacatcgac gcgctttata aggcgtggca gaaggaagaa 120  
 aatcctgccg ccaaagacgc gatgacgcag attttgggtca acagccgtat gtgtgcggaa 180  
 aacaaccgcc ccattctgcca agacacaggt atcgcaaccg tcttctctcaa agtcggtatg 240



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aacgtccaat gggatgcgga catgagcgtg gaagagatgg ttaacgaagg cgtacgccgc 300
gcctacactt gggaaggcaa tacgtgctgc gtttccgtcc tcgccgatcc ggccggcaaa 360
cgccaaaaca ccaaagacaa cccccccgcc gtcattcata tgagcatcgt gccgggcggt 420
aaagtcgaag taacctgctg ggcaaaaggc ggcggtctctg aaaacaaatc caaactcgcc 480
atgctcaatc cttccgacaa catcgtcgat tgggtattga aaaccatccc gaccatgggc 540
gcggtctggt gtcctcccgg catcttgggt atcggcatcg gcggcacgcc cgaaaaagcc 600
gtgctgatgg caaaagagtc cctgatgagc cacatcgaca ttcaagaatt gcaggaaaag 660
gccggtccg gcgcggaatt gtccaccacc gaagccctgc gcctcgaact ctttgaaaaa 720
gtcaacgcgc tgggcatcgg cgcacaaggc ttgggcggac tgaccaccgt gttggacgtg 780
aaaatcctcg attatccgac ccacgcgcc tccaaaccga ttgccatgat tccgaactgc 840
gccgccacc gccacgtcga atttgaattg gacggctcag gccctgtcga actcacgccg 900
ccgcgcgtcg aagactggcc cgatttgact tacagccccg acaacggcaa acgcgtcgat 960
gtcgacaagc tgaccaaaga agaagtggca agctggaaaa ccggcgacgt attgctgttg 1020
aacggcaaaa tcctcaccgg ccgcgatgcc gcacacaaac gcctcgtcga tatgctcaac 1080
aaaggcgaag aattgcccgt cgatttcacc aaccgcctga ttactacgt cggccccgtc 1140
gatccggtcg gcgatgaagt cgtcgggtccg gcaggtccga ccacagccac ccgcatggac 1200
aaattcaccc gccaaatgct cgaacaaacc gacctcttgg gcattgatcg caaatccgag 1260
cgcggcgtgg ccacctgcga agccatcgcc gacaacaaag ccgtgtacct catggcagtc 1320
ggcggcgcgg cgtatctcgt ggcaaaagcc atcaaatctt ccaaagtctt ggcgttcccc 1380
gaattgggca tggaagccat ttacgaattt gaagtcaaag acatgcccg aaccgtcgcc 1440
gtagatagca aaggcgaatc catccacgcc accgccccgc gcaaatggca ggcgaaaaatc 1500
ggcatcatcc ccgtcgaatc ttga                                     1524

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<210> 220

<211> 507

<212> PRT

<213> *Neisseria meningitidis*

<400> 220

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Met Thr Val Ile Lys Gln Glu Asp Phe Ile Gln Ser Ile Cys Asp Ala
  1             5             10            15

```

```

Phe Gln Phe Ile Ser Tyr Tyr His Pro Lys Asp Tyr Ile Asp Ala Leu
  20             25            30

```

```

Tyr Lys Ala Trp Gln Lys Glu Glu Asn Pro Ala Ala Lys Asp Ala Met
  35             40            45

```

```

Thr Gln Ile Leu Val Asn Ser Arg Met Cys Ala Glu Asn Asn Arg Pro
  50             55            60

```

```

Ile Cys Gln Asp Thr Gly Ile Ala Thr Val Phe Leu Lys Val Gly Met
  65             70            75            80

```

```

Asn Val Gln Trp Asp Ala Asp Met Ser Val Glu Glu Met Val Asn Glu
  85             90            95

```

```

Gly Val Arg Arg Ala Tyr Thr Trp Glu Gly Asn Thr Leu Arg Ala Ser
 100            105            110

```

```

Val Leu Ala Asp Pro Ala Gly Lys Arg Gln Asn Thr Lys Asp Asn Thr
 115            120            125

```

```

Pro Ala Val Ile His Met Ser Ile Val Pro Gly Gly Lys Val Glu Val
 130            135            140

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Thr Cys Ala Ala Lys Gly Gly Gly Ser Glu Asn Lys Ser Lys Leu Ala  
 145 150 155 160  
 Met Leu Asn Pro Ser Asp Asn Ile Val Asp Trp Val Leu Lys Thr Ile  
 165 170 175  
 Pro Thr Met Gly Ala Gly Trp Cys Pro Pro Gly Ile Leu Gly Ile Gly  
 180 185 190  
 Ile Gly Gly Thr Pro Glu Lys Ala Val Leu Met Ala Lys Glu Ser Leu  
 195 200 205  
 Met Ser His Ile Asp Ile Gln Glu Leu Gln Glu Lys Ala Ala Ser Gly  
 210 215 220  
 Ala Glu Leu Ser Thr Thr Glu Ala Leu Arg Leu Glu Leu Phe Glu Lys  
 225 230 235 240  
 Val Asn Ala Leu Gly Ile Gly Ala Gln Gly Leu Gly Gly Leu Thr Thr  
 245 250 255  
 Val Leu Asp Val Lys Ile Leu Asp Tyr Pro Thr His Ala Ala Ser Lys  
 260 265 270  
 Pro Ile Ala Met Ile Pro Asn Cys Ala Ala Thr Arg His Val Glu Phe  
 275 280 285  
 Glu Leu Asp Gly Ser Gly Pro Val Glu Leu Thr Pro Pro Arg Val Glu  
 290 295 300  
 Asp Trp Pro Asp Leu Thr Tyr Ser Pro Asp Asn Gly Lys Arg Val Asp  
 305 310 315 320  
 Val Asp Lys Leu Thr Lys Glu Glu Val Ala Ser Trp Lys Thr Gly Asp  
 325 330 335  
 Val Leu Leu Leu Asn Gly Lys Ile Leu Thr Gly Arg Asp Ala Ala His  
 340 345 350  
 Lys Arg Leu Val Asp Met Leu Asn Lys Gly Glu Glu Leu Pro Val Asp  
 355 360 365  
 Phe Thr Asn Arg Leu Ile Tyr Tyr Val Gly Pro Val Asp Pro Val Gly  
 370 375 380  
 Asp Glu Val Val Gly Pro Ala Gly Pro Thr Thr Ala Thr Arg Met Asp  
 385 390 395 400  
 Lys Phe Thr Arg Gln Met Leu Glu Gln Thr Asp Leu Leu Gly Met Ile  
 405 410 415  
 Gly Lys Ser Glu Arg Gly Val Ala Thr Cys Glu Ala Ile Ala Asp Asn  
 420 425 430  
 Lys Ala Val Tyr Leu Met Ala Val Gly Gly Ala Ala Tyr Leu Val Ala  
 435 440 445

Lys Ala Ile Lys Ser Ser Lys Val Leu Ala Phe Pro Glu Leu Gly Met  
 450 455 460

Glu Ala Ile Tyr Glu Phe Glu Val Lys Asp Met Pro Val Thr Val Ala  
 465 470 475 480

Val Asp Ser Lys Gly Glu Ser Ile His Ala Thr Ala Pro Arg Lys Trp  
 485 490 495

Gln Ala Lys Ile Gly Ile Ile Pro Val Glu Ser  
 500 505

<210> 221

<211> 1524

<212> DNA

<213> Neisseria meningitidis

<400> 221

atgaccgtca tcaaacagga agactttatc caaagcattt gcgatgcctt ccaattcatc 60  
 agctactacc atcccaaaga ctacatcgac gcgctttata aggcgtggca gaaggaagaa 120  
 aaccccgccg ccaaagacgc gatgacgcag attttggtca acagccgcat gtgtgccgaa 180

aacaaccgcc ccattctgcca agataccggt atcgcgaccg tgtttttgaa agtcggtatg 240  
 gatgtgcaat gggatgcaga catgagcgtc gaagagatgg ttaacgaagg cgtgcgccgc 300  
 gcctacactt gggaaaggcaa tacgctgcgc gcttccgttc tcgccgaccc cgccggcaaa 360  
 cgccaaaata ccaaagacaa cacgcccgcg gtcatccata tgagcatcgt gccgggacgac 420  
 aaagtcgaag taacttgcgc ggcaaaaggc ggcggttctg aaaacaaatc caaactcgcc 480  
 atgctcaacc ctccgcacaa catcgtcgat tgggtattga aaaccattcc gaccatgggc 540  
 gcgggctggt gtccctcccg catcttgggc atcggcatcg gcggtacgcc cgaaaaagcc 600  
 gtgttgatgg cgaaagaatc cctgatgagc cacatcgaca tccaagaatt gcaggaaaaa 660  
 gcgcgcgccg gcgcggaatt gtccaccacc gaagccctgc gcctcgaact ctttgaaaaa 720  
 gtcaacgcgc taggcacgcg cgcgcaaggc ttgggcgggc tgaccaccgt gttggacgtg 780  
 aaaatcctcg attaccgcgac ccacgcgccg tccaaaccga ttgccatgat tccgaactgc 840  
 gccgccaccc gccacgtcga atttgaattg gacggctcag gccctgtcga actcacgccg 900  
 ccgcgcgtcg aagactggcc cgatttgact tacagccccg acaacggcaa acgcgtcgat 960  
 gtcgacaagc tgaccaaaga agaagtggca agctggaaaa ccggcgacgt attgctgttg 1020  
 aacggcaaaa tcctcaccgg ccgcgatgcc gcacacaaac gcctcgtcga tatgctcgac 1080  
 aaaggcgaag aattgcccggt cgatttcacc aaccgcctga ttactacgt cggccccgctc 1140  
 gatccggtcg gcgacgaaat cgtcggccca gcaggctcga ccaccgccac ccgcatggac 1200  
 aaattcaccg gccaaatgct cgaacaaacc gacctcttgg gcatgatcgg caaatccgag 1260  
 cgcggcgcgg ccacctgcga agccatcgcc gacaacaaag ccgtgtacct catggcagtc 1320  
 ggcggcgcgg cgtatctcgt ggcaaaagcc atcaaatctt ccaaagtctt ggcggtcccc 1380  
 gaattgggca tggaaagccat ttacgaattt gaagtcaaag acatgccgtt aaccgtcgcc 1440  
 gtagacagca aaggcgaatc catccacgcc accgccccgc ccaatggca ggcgaaaatc 1500  
 ggcacatcc ccgtcaaatc ttga 1524

<210> 222

<211> 507

<212> PRT

<213> Neisseria meningitidis

<400> 222

Met Thr Val Ile Lys Gln Glu Asp Phe Ile Gln Ser Ile Cys Asp Ala  
 1 5 10 15

Phe Gln Phe Ile Ser Tyr Tyr His Pro Lys Asp Tyr Ile Asp Ala Leu  
 20 25 30  
 Tyr Lys Ala Trp Gln Lys Glu Glu Asn Pro Ala Ala Lys Asp Ala Met  
 35 40 45  
 Thr Gln Ile Leu Val Asn Ser Arg Met Cys Ala Glu Asn Asn Arg Pro  
 50 55 60  
 Ile Cys Gln Asp Thr Gly Ile Ala Thr Val Phe Leu Lys Val Gly Met  
 65 70 75 80  
 Asp Val Gln Trp Asp Ala Asp Met Ser Val Glu Glu Met Val Asn Glu  
 85 90 95  
 Gly Val Arg Arg Ala Tyr Thr Trp Glu Gly Asn Thr Leu Arg Ala Ser  
 100 105 110  
 Val Leu Ala Asp Pro Ala Gly Lys Arg Gln Asn Thr Lys Asp Asn Thr  
 115 120 125  
 Pro Ala Val Ile His Met Ser Ile Val Pro Gly Asp Lys Val Glu Val  
 130 135 140  
 Thr Cys Ala Ala Lys Gly Gly Gly Ser Glu Asn Lys Ser Lys Leu Ala  
 145 150 155 160  
 Met Leu Asn Pro Ser Asp Asn Ile Val Asp Trp Val Leu Lys Thr Ile  
 165 170 175  
 Pro Thr Met Gly Ala Gly Trp Cys Pro Pro Gly Ile Leu Gly Ile Gly  
 180 185 190  
 Ile Gly Gly Thr Pro Glu Lys Ala Val Leu Met Ala Lys Glu Ser Leu  
 195 200 205  
 Met Ser His Ile Asp Ile Gln Glu Leu Gln Glu Lys Ala Ala Ser Gly  
 210 215 220  
 Ala Glu Leu Ser Thr Thr Glu Ala Leu Arg Leu Glu Leu Phe Glu Lys  
 225 230 235 240  
 Val Asn Ala Leu Gly Ile Gly Ala Gln Gly Leu Gly Gly Leu Thr Thr  
 245 250 255  
 Val Leu Asp Val Lys Ile Leu Asp Tyr Pro Thr His Ala Ala Ser Lys  
 260 265 270  
 Pro Ile Ala Met Ile Pro Asn Cys Ala Ala Thr Arg His Val Glu Phe  
 275 280 285  
 Glu Leu Asp Gly Ser Gly Pro Val Glu Leu Thr Pro Pro Arg Val Glu  
 290 295 300  
 Asp Trp Pro Asp Leu Thr Tyr Ser Pro Asp Asn Gly Lys Arg Val Asp  
 305 310 315 320

Val Asp Lys Leu Thr Lys Glu Glu Val Ala Ser Trp Lys Thr Gly Asp  
325 330 335

Val Leu Leu Leu Asn Gly Lys Ile Leu Thr Gly Arg Asp Ala Ala His  
340 345 350

Lys Arg Leu Val Asp Met Leu Asp Lys Gly Glu Glu Leu Pro Val Asp  
355 360 365

Phe Thr Asn Arg Leu Ile Tyr Tyr Val Gly Pro Val Asp Pro Val Gly  
370 375 380

Asp Glu Ile Val Gly Pro Ala Gly Pro Thr Thr Ala Thr Arg Met Asp  
385 390 395 400

Lys Phe Thr Arg Gln Met Leu Glu Gln Thr Asp Leu Leu Gly Met Ile  
405 410 415

Gly Lys Ser Glu Arg Gly Ala Ala Thr Cys Glu Ala Ile Ala Asp Asn  
420 425 430

Lys Ala Val Tyr Leu Met Ala Val Gly Gly Ala Ala Tyr Leu Val Ala  
435 440 445

Lys Ala Ile Lys Ser Ser Lys Val Leu Ala Phe Pro Glu Leu Gly Met  
450 455 460

Glu Ala Ile Tyr Glu Phe Glu Val Lys Asp Met Pro Val Thr Val Ala  
465 470 475 480

Val Asp Ser Lys Gly Glu Ser Ile His Ala Thr Ala Pro Pro Gln Trp  
485 490 495

Gln Ala Lys Ile Gly Ile Ile Pro Val Lys Ser  
500 505

<210> 223  
<211> 360  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 223  
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acgggcgaca gcaggctgtt gtccaccacc aagagcgcg c gatgccgtg cgccaattcc 120  
gccaaaggctt ccaagtcggc cacttcgccc aaggggttg acggcgtttc caaaaacagc 180  
agtttggtgt tggctttgac ggcggctttc cattcattta tatcagtcgg cgacacgcgg 240  
ctcactccga tgccgaattt ggtaacgatg ttattgataa agccgacggt cgtgccgaac 300  
aggctgcggc tggaaaccac atggtcgccc gcctgcagga aggtgaaaaa cgccgcctga 360

<210> 224  
<211> 119  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 224

Met Ala Leu Val Ala Glu Glu Thr Glu Ile Ser Ala Pro Cys Phe Lys  
1 5 10 15

Gly Cys Glu Pro Thr Gly Asp Ser Arg Leu Leu Ser Thr Thr Lys Ser  
20 25 30

Ala Pro Met Pro Cys Ala Asn Ser Ala Lys Ala Ser Lys Ser Ala Thr  
35 40 45

Ser Pro Lys Gly Leu Asp Gly Val Ser Lys Asn Ser Ser Leu Val Leu  
50 55 60

Ala Leu Thr Ala Ala Phe His Ser Phe Ile Ser Val Gly Asp Thr Arg  
65 70 75 80

Leu Thr Pro Met Pro Asn Leu Val Thr Met Leu Leu Ile Lys Pro Thr  
85 90 95

Val Val Pro Asn Arg Leu Arg Leu Glu Thr Thr Trp Ser Pro Ala Cys  
100 105 110

Arg Lys Val Lys Asn Ala Ala  
115

<210> 225

<211> 360

<212> DNA

<213> Neisseria meningitidis

<400> 225

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acgggcgaca gcaggctgtt gtccaccacc aagagcgcgc cgatgccgtg cgccaattcc 120  
gccaaggctt ccaagtcggc cacttcgccc aaggggttgg acggcgtttc caaaaacagc 180  
agtttggtgt tggctttgac ggcggctttc cattcattha tatcagtcgg cgacacgcgg 240  
ctcactccga tgccgaattt ggtaacgatg ttattgataa agccgacggt cgtgccgaac 300  
aggctgcggc tggaaaccac atggtcgccc gcctgcagga aggtgaaaaa cgccgcctga 360

<210> 226

<211> 119

<212> PRT

<213> Neisseria meningitidis

<400> 226

Met Ala Leu Val Ala Glu Glu Thr Glu Ile Ser Ala Pro Cys Phe Lys  
1 5 10 15

Gly Cys Glu Pro Thr Gly Asp Ser Arg Leu Leu Ser Thr Thr Lys Ser  
20 25 30

Ala Pro Met Pro Cys Ala Asn Ser Ala Lys Ala Ser Lys Ser Ala Thr  
35 40 45

Ser Pro Lys Gly Leu Asp Gly Val Ser Lys Asn Ser Ser Leu Val Leu  
50 55 60

Ala Leu Thr Ala Ala Phe His Ser Phe Ile Ser Val Gly Asp Thr Arg  
65 70 75 80

Leu Thr Pro Met Pro Asn Leu Val Thr Met Leu Leu Ile Lys Pro Thr  
85 90 95

Val Val Pro Asn Arg Leu Arg Leu Glu Thr Thr Trp Ser Pro Ala Cys  
100 105 110

Arg Lys Val Lys Asn Ala Ala  
115

<210> 227

<211> 360

<212> DNA

<213> Neisseria meningitidis

<400> 227

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gccaaggctt ccaagtgcgc cacttctccc aagggattgg acggcgtttc caaaaacagc 180  
agtttggtgt tggctttgac ggcggctttc cattcgttta tatcagtcgg cgacacgtga 240  
ctcacttcga tgccgaattt ggtaacgatg ttattgataa agccgacggt cgtgccgaac 300  
aggctgcggc tggaaatcac atggtcgccc gcctgcaaaa aggtgaaaaa cgccgcctga 360

<210> 228

<211> 117

<212> PRT

<213> Neisseria meningitidis

<400> 228

Met Ala Leu Val Ala Glu Glu Thr Glu Ile Ser Ala Pro Cys Phe Lys  
1 5 10 15

Gly Glu Pro Thr Gly Asp Ser Arg Leu Leu Ser Thr Thr Lys Ser Ala  
20 25 30

Pro Met Pro Cys Ala Asn Ser Ala Lys Ala Ser Lys Ser Ala Thr Ser  
35 40 45

Pro Lys Gly Leu Asp Gly Val Ser Lys Asn Ser Ser Leu Val Leu Ala  
50 55 60

Leu Thr Ala Ala Phe His Ser Phe Ile Ser Val Gly Asp Thr Leu Thr  
65 70 75 80

Ser Met Pro Asn Leu Val Thr Met Leu Leu Ile Lys Pro Thr Val Val  
85 90 95

Pro Asn Arg Leu Arg Leu Glu Ile Thr Trp Ser Pro Ala Cys Lys Lys  
100 105 110

Val Lys Asn Ala Ala  
115

<210> 229  
 <211> 387  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 229  
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 ccgtctgaaa cacgcaatca gcgcgcgagt gcctgtttca aatcgtcaat caaatcgcca 120  
 acatattcca aaccgaccga caggcgcacc agtccggggc ggataccggc ggcgagtttt 180  
 tcttcgggct gcatcctgcc gtgcgtggtt gtccacggat tggatgatgg cgagcgcacg 240  
 tcgccgaggt tggcgggtacg ggaaaagagt tccacgactt tccacgcggc tgcttggtcg 300  
 gcgacttcaa aaccgatgac gatgccgccg ccgttttgct gtttgccgat aagctccgcc 360  
 tgcggatggt cgggcaatcc ggtgtag 387

<210> 230  
 <211> 128  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 230  
 Met Cys Met Pro Tyr Ala Ile Arg Val Ser Asp Gly Ile Cys Arg Ile  
 1 5 10 15  
 Phe Pro Pro Met Pro Ser Glu Thr Arg Asn Gln Arg Ala Ser Ala Cys  
 20 25 30  
 Phe Lys Ser Ser Ile Lys Ser Pro Thr Tyr Ser Lys Pro Thr Asp Arg  
 35 40 45  
 Arg Thr Ser Pro Gly Arg Ile Pro Ala Ala Ser Phe Ser Ser Gly Cys  
 50 55 60  
 Ile Leu Pro Cys Val Val Val His Gly Leu Val Met Val Glu Arg Thr  
 65 70 75 80  
 Ser Pro Arg Leu Ala Val Arg Glu Lys Ser Ser Thr Thr Phe His Ala  
 85 90 95  
 Ala Ala Trp Ser Ala Thr Ser Lys Pro Met Thr Met Pro Pro Pro Phe  
 100 105 110  
 Cys Cys Leu Arg Ile Ser Ser Ala Cys Gly Trp Ser Gly Asn Pro Val  
 115 120 125

<210> 231  
 <211> 387  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 231  
 atgtgtatgc catataagat aagggtttca gacggcatct gctgtccaat gccgtctgaa 60



acacgcaatc agcgtgcgag tgcctgtttc aaatcgtcaa tcaaatcgcc aacatattcc 120  
aaaccgaccg acaggcgac caatccgggg cggatgttgg cggcgagttt ttcttcgggc 180  
tgcatacctgc cgtgctggtg tgtccacggg tgggtaatgg tcgagcgac gtcaccgagg 240  
ttggcgggtgc gggaaaagag ttccacgccg tccacaactt tccacgccgc ttcttgatcg 300  
gcaacttcaa agccgatgac gatgccgccg ccgttttgct gtttgcgat aagcgccgcc 360  
tgaggatggt cggacaatcc ggtgtag 387

<210> 232

<211> 128

<212> PRT

<213> Neisseria meningitidis

<400> 232

Met Cys Met Pro Tyr Lys Ile Arg Val Ser Asp Gly Ile Cys Cys Pro  
1 5 10 15

Met Pro Ser Glu Thr Arg Asn Gln Arg Ala Ser Ala Cys Phe Lys Ser  
20 25 30

Ser Ile Lys Ser Pro Thr Tyr Ser Lys Pro Thr Asp Arg Arg Thr Asn  
35 40 45

Pro Gly Arg Met Leu Ala Ala Ser Phe Ser Ser Gly Cys Ile Leu Pro  
50 55 60

Cys Val Val Val His Gly Trp Val Met Val Glu Arg Thr Ser Pro Arg  
65 70 75 80

Leu Ala Val Arg Glu Lys Ser Ser Thr Pro Ser Thr Thr Phe His Ala  
85 90 95

Ala Ser Xaa Ser Ala Thr Ser Lys Pro Met Thr Met Pro Pro Pro Phe  
100 105 110

Cys Cys Leu Arg Ile Ser Ala Ala Xaa Gly Trp Ser Asp Asn Pro Val  
115 120 125

<210> 233

<211> 395

<212> DNA

<213> Neisseria meningitidis

<400> 233

acgtgtatgt catataagat aagggtttca gacggcattt gcggtgtttt tccgccgatg 60  
ccgtctgaac acgcaatcag cgcgcgagtg cctgtttcaa atcgtcaatc aaatcgccaa 120  
catattccaa accgaccgac aggcgcacca atccggggcg gatgttggcg gcgagttttt 180  
cttcgggctg catcctgccg tgcgtggttg tccacggatg ggtaatggtc gagcgcacgt 240  
cgccgaggtt ggcggtacgg gagaaaagtt cgacgccgtc cagcactttc cacgcggctg 300  
cttggtcggc gacttcaaag ccgatgacga tgccgccgcc gttttgctgt ttgcggataa 360  
gctccgcctg aggatggtcg ggtaatccgg tgtaa 395

<210> 234  
<211> 130  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 234  
Thr Cys Met Ser Tyr Lys Ile Arg Val Ser Asp Gly Ile Cys Gly Val  
1 5 10 15  
Phe Pro Pro Met Pro Ser Glu Xaa Arg Asn Gln Arg Ala Ser Ala Cys  
20 25 30  
Phe Lys Ser Ser Ile Lys Ser Pro Thr Tyr Ser Lys Pro Thr Asp Arg  
35 40 45  
Arg Thr Asn Pro Gly Arg Met Leu Ala Ala Ser Phe Ser Ser Gly Cys  
50 55 60  
Ile Leu Pro Cys Val Val Val His Gly Trp Val Met Val Glu Arg Thr  
65 70 75 80  
Ser Pro Arg Leu Ala Val Arg Glu Lys Ser Ser Thr Pro Ser Thr Thr  
85 90 95  
Phe His Ala Ala Ala Trp Ser Ala Thr Ser Lys Pro Met Thr Met Pro  
100 105 110  
Pro Pro Phe Cys Cys Leu Arg Ile Ser Ser Ala Gly Trp Ser Gly Asn  
115 120 125  
Pro Val  
130

<210> 235  
<211> 414  
<212> DNA  
<213> *Neisseria gonorrhoeae*

<400> 235  
atgccgcctt acttcatcac cctcttaacg atggaaaata caaaaagcgc ggcgaaaacg 60  
cccactacaa tccaaccggc ttccataccg tccgcttttg cggcttccaa agcgtttttt 120  
gccgtttcgg gcaacgctgc gtttgccgtg gccgccaag ccagcggggc ggctgttaca 180  
acagccagtt ttgcgccgta ttacggcag gtgtaataa atttcattgat attttccttt 240  
acgaaatttt taataaatg tgtttgcggg ctttgtgaag gtttttagaga ccgcctgccg 300  
ggcctcttaa acttaattctt ctttttcgta gaatccgaaa attacaaatt cccgcctat 360  
ctcttccaat gccgagctaa aagcgtcttc atagctgtca tatttaccgg ctga 414

<210> 236  
<211> 137  
<212> PRT  
<213> *Neisseria gonorrhoeae*

<400> 236  
Met Pro Pro Tyr Phe Ile Thr Leu Leu Thr Met Glu Asn Thr Lys Ser

1	5	10	15
Ala Ala Lys Thr	Pro Thr Thr Ile	Gln Pro Ala Ser	Ile Pro Ser Ala
20	25	30	
Phe Ala Ala Ser	Lys Ala Phe Phe	Ala Val Ser Gly	Asn Ala Ala Phe
35	40	45	
Ala Cys Ala Ala	Lys Ala Ser Gly	Ala Ala Val Thr	Thr Ala Ser Phe
50	55	60	
Ala Pro Tyr Leu	Arg Gln Val Leu	Ile Asn Phe Met	Ile Phe Ser Phe
65	70	75	80
Thr Lys Phe Leu	Lys Lys Cys Val	Cys Gly Leu Cys	Glu Gly Phe Arg
85	90	95	
Asp Arg Leu Pro	Gly Leu Leu Asn	Leu Ile Phe Phe	Phe Val Glu Ser
100	105	110	
Glu Asn Tyr Lys	Phe Pro Ala Tyr	Leu Phe Gln Cys	Arg Ala Lys Ser
115	120	125	
Val Phe Ile Ala	Val Ile Phe Thr	Gly	
130	135		

<210> 237  
 <211> 411  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 237  
 atgccgtctt acttcatcac tctcttaacg atggaaaata caaaaagcgc ggcgaaaatg 60  
 ccactacaa tccaaccggc ttccataccg tccgcttttg cggcttccaa agcgtttttt 120  
 gccgtatcgg gcaacgttgc atttgcatgt gcggccaaag ccaggggagc agctgttaca 180  
 acagccagtt ttgcgcogta tttacggcag gtgttaataa atttcatgat atttccttc 240  
 aaaaagtgtt tggcggtaat ggatggagcg tttttcagac gaccgccgaa catccgaaaa 300  
 tcagtctttc aaaaatccga atacgacaaa ttcgtatttg ttgccgattt cttccaaacc 360  
 tgcgttaatc gcttcttcga agtcgtagaa ataatcggca ttggtgatta a 411

<210> 238  
 <211> 136  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 238  
 Met Pro Ser Tyr Phe Ile Thr Leu Leu Thr Met Glu Asn Thr Lys Ser  
 1 5 10 15

Ala Ala Lys Met	Pro Thr Thr Ile	Gln Pro Ala Ser	Ile Pro Ser Ala
20	25	30	
Phe Ala Ala Ser	Lys Ala Phe Phe	Ala Val Ser Gly	Asn Val Ala Phe
35	40	45	

Ala Cys Ala Ala Lys Ala Arg Gly Ala Ala Val Thr Thr Ala Ser Phe  
50 55 60

Ala Pro Tyr Leu Arg Gln Val Leu Ile Asn Phe Met Ile Phe Ser Phe  
65 70 75 80

Lys Lys Cys Leu Ala Val Met Asp Gly Ala Phe Phe Arg Arg Pro Pro  
85 90 95

Asn Ile Arg Lys Ser Val Phe Gln Lys Ser Glu Tyr Asp Lys Phe Val  
100 105 110

Leu Val Ala Asp Phe Phe Gln Thr Cys Val Asn Arg Phe Phe Glu Val  
115 120 125

Val Glu Ile Ile Gly Ile Gly Asp  
130 135

<210> 239

<211> 411

<212> DNA

<213> Neisseria meningitidis

<400> 239

atgccgtctt acttcatcac tctcttaacg atggaaaaga caaaaagcgc ggcgaaaacg 60  
cccactacaa tccaaccggc ttccataccg tccgcttttg cggcttccaa agcgtttttt 120  
gctgtatcgg gcaacgttgc atttgcattg gcggccaaag ccaggggagc agctgtttaca 180  
acagccagtt ttgcgcgcta ttacggcag gtgttaataa atttcatgat attttccttc 240  
aaaaagtgtt tggcggtaat ggatggagcg tttttcagac gaccgccgaa catccgaaaa 300  
tcagtctttc aaaaatccga atacgacaaa ttcgtattgg ttgccgattt cttccaaacc 360  
tgcgttaatc gcttcttcga agtcgtagaa ataatcggca ttggtgatta a 411

<210> 240

<211> 136

<212> PRT

<213> Neisseria meningitidis

<400> 240

Met Pro Ser Tyr Phe Ile Thr Leu Leu Thr Met Glu Lys Thr Lys Ser  
1 5 10 15

Ala Ala Lys Thr Pro Thr Thr Ile Gln Pro Ala Ser Ile Pro Ser Ala  
20 25 30

Phe Ala Ala Ser Lys Ala Phe Phe Ala Val Ser Gly Asn Val Ala Phe  
35 40 45

Ala Cys Ala Ala Lys Ala Arg Gly Ala Ala Val Thr Thr Ala Ser Phe  
50 55 60

Ala Pro Tyr Leu Arg Gln Val Leu Ile Asn Phe Met Ile Phe Ser Phe  
65 70 75 80

Lys Lys Cys Leu Ala Val Met Asp Gly Ala Phe Phe Arg Arg Pro Pro  
85 90 95

Asn Ile Arg Lys Ser Val Phe Gln Lys Ser Glu Tyr Asp Lys Phe Val  
 100 105 110

Leu Val Ala Asp Phe Phe Gln Thr Cys Val Asn Arg Phe Phe Glu Val  
 115 120 125

Val Glu Ile Ile Gly Ile Gly Asp  
 130 135

<210> 241

<211> 828

<212> DNA

<213> Neisseria gonorrhoeae

<400> 241

atgtgggata atgccgaagc gatggaacgg ctgacgcgct ggctgcttgt catgatggcg 60  
 atgctgcttg ctgcgtccgg gctgggtttgg ttttacaatt cgaatcatct gcccgtaag 120  
 caggtgtcgc tgaagggcaa cctgggttat tccgataaga aggcattggg cagtttggcg 180  
 aaagaataca tccatgggaa tattttgagg acggacatca atggcgacaca ggaagcctac 240  
 cgccgggtatc cgtggattgc gtcggtcatg gtgcgcgcgc gttttccga tacggttgag 300  
 gtcgtcctga ccgagcgcaa gccggttgca cgttggggcg accatgcctt ggtggacggc 360  
 gaaggcaatg tttttgaagc ccgcttggac agacccgaa tgccgggtatt cagagggcg 420  
 gaaggaacgt ctgccgaaat gctccgccgt tatgacgaat tttcgactgt tttggcaaaa 480  
 caggggtttg gcatcaaaga gatgacctat acggcacgtt cggcggtggaa tgtcggtttg 540  
 gacaacggca tcaccgtcag gctcggacgg gaaaacgaga tgaaacgcct ccggcttttt 600  
 accgaagcgt ggcagcatct gttgcgtaag aataaaaaatc ggttatccta tgtggatatg 660  
 aggtataagg acggattttc agtcccccat gtcgccgacg gtttaccgca aaaagaatcc 720  
 gaagaatatt gggaacaggt ttgggacata ttacggcctg gcgtcggaac cggttcgacg 780  
 caaatttcaa tcagttataa gggcagacga acaatggaac agcagtaa 828

<210> 242

<211> 275

<212> PRT

<213> Neisseria gonorrhoeae

<400> 242

Met Trp Asp Asn Ala Glu Ala Met Glu Arg Leu Thr Arg Trp Leu Leu  
 1 5 10 15

Val Met Met Ala Met Leu Leu Ala Ala Ser Gly Leu Val Trp Phe Tyr  
 20 25 30

Asn Ser Asn His Leu Pro Val Lys Gln Val Ser Leu Lys Gly Asn Leu  
 35 40 45

Val Tyr Ser Asp Lys Lys Ala Leu Gly Ser Leu Ala Lys Glu Tyr Ile  
 50 55 60

His Gly Asn Ile Leu Arg Thr Asp Ile Asn Gly Ala Gln Glu Ala Tyr  
 65 70 75 80

Arg Arg Tyr Pro Trp Ile Ala Ser Val Met Val Arg Arg Arg Phe Pro  
 85 90 95

Asp Thr Val Glu Val Val Leu Thr Glu Arg Lys Pro Val Ala Arg Trp  
 100 105 110  
 Gly Asp His Ala Leu Val Asp Gly Glu Gly Asn Val Phe Glu Ala Arg  
 115 120 125  
 Leu Asp Arg Pro Gly Met Pro Val Phe Arg Gly Ala Glu Gly Thr Ser  
 130 135 140  
 Ala Glu Met Leu Arg Arg Tyr Asp Glu Phe Ser Thr Val Leu Ala Lys  
 145 150 155 160  
 Gln Gly Leu Gly Ile Lys Glu Met Thr Tyr Thr Ala Arg Ser Ala Trp  
 165 170 175  
 Asn Val Val Leu Asp Asn Gly Ile Thr Val Arg Leu Gly Arg Glu Asn  
 180 185 190  
 Glu Met Lys Arg Leu Arg Leu Phe Thr Glu Ala Trp Gln His Leu Leu  
 195 200 205  
 Arg Lys Asn Lys Asn Arg Leu Ser Tyr Val Asp Met Arg Tyr Lys Asp  
 210 215 220  
 Gly Phe Ser Val Pro His Ala Pro Asp Gly Leu Pro Glu Lys Glu Ser  
 225 230 235 240  
 Glu Glu Tyr Trp Glu Gln Val Trp Asp Ile Leu Arg Pro Gly Val Gly  
 245 250 255  
 Asn Gly Ser Thr Gln Ile Ser Ile Ser Tyr Lys Gly Arg Arg Thr Met  
 260 265 270  
 Glu Gln Gln  
 275

<210> 243  
 <211> 729  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 243  
 atgtgggata atgccgaagc gatggaacgg ctgacgcgct ggctgcttgt catgatggcg 60  
 atgctgcttg ctgcgtccgg gctggtttgg ttttacaatt cgaatcatct gcccgtaag 120  
 caggtgtcgc tgaagggcaa cctggtttat tccgataaga agacattggg cagtttggcg 180  
 aaagaataca tccatgggaa tattttgagg acggacatca atggcgcaca ggaggcctac 240  
 cgccgggtatc cgtggattgc gtcggtcgat gtgcgcgcc gttttcccga cacggttgag 300  
 gtcgtcctga ccgagcgcaa gccggtcgcg cgttggggcg accatgcctt ggtggacggc 360  
 gaaggcaatg tttttgaagc ccgcttggac agaccggaa tgccggtatt cagaggcgcg 420  
 gaaggaacgt ctgccgaaat gctccgccgt tatgacgaat tttcgactgt tttggcaaaa 480  
 cagggtttgg gcatcaaaga gatgacctat acggcacgtt cggcgtggat tgcgttttg 540  
 gacaacggca tcaccgtcag gctcggacgg gaaaacgaga tgaaacgcct ccggcttttt 600  
 accgaagcgt ggcagcatct gttgcgtaaa aataaaaatc gggtatccta tgtggatatg 660  
 aggtataagc acggattttc agtccgctat gcttcgcagc gtttaccgca aaaagaatcc 720  
 gaagaatag 729

<210> 244  
<211> 242  
<212> PRT  
<213> Neisseria meningitidis

<400> 244

Met Trp Asp Asn Ala Glu Ala Met Glu Arg Leu Thr Arg Trp Leu Leu  
1 5 10 15  
Val Met Met Ala Met Leu Leu Ala Ala Ser Gly Leu Val Trp Phe Tyr  
20 25 30  
Asn Ser Asn His Leu Pro Val Lys Gln Val Ser Leu Lys Gly Asn Leu  
35 40 45  
Val Tyr Ser Asp Lys Lys Thr Leu Gly Ser Leu Ala Lys Glu Tyr Ile  
50 55 60  
His Gly Asn Ile Leu Arg Thr Asp Ile Asn Gly Ala Gln Glu Ala Tyr  
65 70 75 80  
Arg Arg Tyr Pro Trp Ile Ala Ser Val Met Val Arg Arg Arg Phe Pro  
85 90 95  
Asp Thr Val Glu Val Val Leu Thr Glu Arg Lys Pro Val Ala Arg Trp  
100 105 110  
Gly Asp His Ala Leu Val Asp Gly Glu Gly Asn Val Phe Glu Ala Arg  
115 120 125  
Leu Asp Arg Pro Gly Met Pro Val Phe Arg Gly Ala Glu Gly Thr Ser  
130 135 140  
Ala Glu Met Leu Arg Arg Tyr Asp Glu Phe Ser Thr Val Leu Ala Lys  
145 150 155 160  
Gln Gly Leu Gly Ile Lys Glu Met Thr Tyr Thr Ala Arg Ser Ala Trp  
165 170 175  
Ile Val Val Leu Asp Asn Gly Ile Thr Val Arg Leu Gly Arg Glu Asn  
180 185 190  
Glu Met Lys Arg Leu Arg Leu Phe Thr Glu Ala Trp Gln His Leu Leu  
195 200 205  
Arg Lys Asn Lys Asn Arg Leu Ser Tyr Val Asp Met Arg Tyr Lys Asp  
210 215 220  
Gly Phe Ser Val Arg Tyr Ala Ser Asp Gly Leu Pro Glu Lys Glu Ser  
225 230 235 240  
Glu Glu

<210> 245

<211> 729  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 245  
 atgtgggata atgccgaagc gatggaacgg ctgacgcgct ggctgcttgt catgatggcg 60  
 atgctgcttg ctgcgccgg gctggtttgg ttttacaatt cgaatcatct gcccgtaag 120  
 cagggtgtcg tgaagggcaa cctagtttat tccgataaga aagcattggg cagtttggcg 180  
 aaagaataca tccatgggaa tattttgagg acggacatca atggcgcaca ggaggcctac 240  
 cgccggtatc cgtggattgc gtcggtcgat gtgcgccgcc gttttccga cacggttgag 300  
 gtcgtcctga ccgagcgcaa gccggtcgag cgttggggcg accatgcctt ggtggacggc 360  
 gaaggcaatg tttttgaagc ccgtttggac agaccggaa tgccggtatt cagaggcgcg 420  
 gaaggaaacgt ctgccgaaat gctccgccgt tatgacgaat tttcgactgt tttggcaaaa 480  
 cagggtttgg gcatcaaaga gatgacctat acggcacggt cggcggtggat tgtcgttttg 540  
 gacaacggca tcaccgtcag gtcggacgg gaaaacgaga tgaaacgcct ccggcttttt 600  
 accgaagcgt ggcaacatct gttgcgtaaa aataaaaatc ggttatccta tgtggatatg 660  
 aggtataagg acggattttc agtccgctat gctcccgcag gtttaccga aaaagaatcc 720  
 gaagaatag 729

<210> 246  
 <211> 242  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 246  
 Met Trp Asp Asn Ala Glu Ala Met Glu Arg Leu Thr Arg Trp Leu Leu  
 1 5 10 15  
 Val Met Met Ala Met Leu Leu Ala Ala Ser Gly Leu Val Trp Phe Tyr  
 20 25 30  
 Asn Ser Asn His Leu Pro Val Lys Gln Val Ser Leu Lys Gly Asn Leu  
 35 40 45  
 Val Tyr Ser Asp Lys Lys Ala Leu Gly Ser Leu Ala Lys Glu Tyr Ile  
 50 55 60  
 His Gly Asn Ile Leu Arg Thr Asp Ile Asn Gly Ala Gln Glu Ala Tyr  
 65 70 75 80  
 Arg Arg Tyr Pro Trp Ile Ala Ser Val Met Val Arg Arg Arg Phe Pro  
 85 90 95  
 Asp Thr Val Glu Val Val Leu Thr Glu Arg Lys Pro Val Ala Arg Trp  
 100 105 110  
 Gly Asp His Ala Leu Val Asp Gly Glu Gly Asn Val Phe Glu Ala Arg  
 115 120 125  
 Leu Asp Arg Pro Gly Met Pro Val Phe Arg Gly Ala Glu Gly Thr Ser  
 130 135 140  
 Ala Glu Met Leu Arg Arg Tyr Asp Glu Phe Ser Thr Val Leu Ala Lys  
 145 150 155 160  
 Gln Gly Leu Gly Ile Lys Glu Met Thr Tyr Thr Ala Arg Ser Ala Trp



	165		170		175
Ile Val Val	Leu Asp Asn Gly Ile Thr Val Arg Leu Gly Arg Glu Asn				
	180		185		190
Glu Met Lys Arg Leu Arg Leu Phe Thr Glu Ala Trp Gln His Leu Leu					
	195		200		205
Arg Lys Asn Lys Asn Arg Leu Ser Tyr Val Asp Met Arg Tyr Lys Asp					
	210		215		220
Gly Phe Ser Val Arg Tyr Ala Pro Asp Gly Leu Pro Glu Lys Glu Ser					
	225		230		235
					240
Glu Glu					

<210> 247  
 <211> 1359  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 247

atgaaaccac	tggaacctaa	tttcatctgc	caagccctca	agcttccgat	gccgtctgaa	60
aacaaacccg	tgtcgcgcat	cgtaaccgac	agccgcgata	ttcgggaagg	cgatgtgttt	120
ttcgcattgg	cgggcgggcg	gtttgacgcg	catgattttg	ttggaggcgt	attgtctgcg	180
ggcgcggcgg	cggttggtgt	ttcgcgcgaa	gattgcgcgg	ctttgggcgg	cgcggttgaaa	240
gtcgaatgaca	cgcttgccgc	gttgcaaacg	ttggcgaagg	cgtggcgcgga	taatgtgaac	300
ccgtttgtgt	tcggcattac	cggttcgggc	ggcaagacga	cggtgaagga	gatgctggct	360
gcggtattgc	gccgcggttt	cggcgatgat	gccgtttcgg	cgacggcagg	caacttcaac	420
aaccacatcg	gattgccgct	gactttattg	aaattaaacg	aaaaacaccg	ctatgccgtg	480
attgaaatgg	gcatgaacca	ttttggcgaa	ctggcggttt	taacgcaaat	cgccaaaccc	540
gatgccgctt	tggtcaacaa	cgccctgcgc	gcccattgtc	gatgcgggtt	cgacggagtg	600
ggcgatattg	ccaaagcgaa	aagcgagatt	tatgcaggct	tatgttcaga	cggcattggca	660
ctgattcctc	aagaagatgc	caatatggct	gtcttcaaaa	cggcaacggt	taatttgaat	720
acgtgcactt	tcggcgctga	tagcggcgat	gtccgcgcgg	aaaatatcgt	gctgaaacct	780
ttgtcgtgcg	aatttgattt	ggtgtgcggc	gacgagcgca	ctgccgtggt	gctgcctgtt	840
cccggccgcc	acaatgtcca	caacgccgcc	gctgccgcgg	cgctggcttt	ggctgccggt	900
ttgagtttga	acgatgtggc	ggaaggtttg	caaggcttca	gcaacatcaa	aggccgtctg	960
aacgtcaaag	ccggcatcaa	gggcgcaacc	ctgattgacg	atacttataa	tgcgaatccc	1020
gacagtatga	aagccgcggt	tgacgtgttg	gcgcgtatgc	ctgcgcgcgc	cattttcgtg	1080
atgggcgata	tgggcgaact	gggcgaggac	gaagccgcgc	ccatgcacgc	cgaagtcggc	1140
gcgtacgccc	gcgaccaagg	catcgaagcg	gcttattttg	tcggcgacaa	cagcgtcgaa	1200
gcggcggaag	aatttggcgc	ggacgggtttg	tggttcgcgc	ccaaagaccc	gttgattcaa	1260
gtgttgagcc	acgatttgcc	cgaacgcgcc	accgtgttgg	tgaaagggtc	gcgctttatg	1320
cagatggaag	aagtggctga	ggcattggag	gataagtga			1359

<210> 248  
 <211> 452  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 248

Met	Lys	Pro	Leu	Asp	Leu	Asn	Phe	Ile	Cys	Gln	Ala	Leu	Lys	Leu	Pro
1					5				10					15	

Met Pro Ser Glu Asn Lys Pro Val Ser Arg Ile Val Thr Asp Ser Arg  
 20 25 30  
 Asp Ile Arg Glu Gly Asp Val Phe Phe Ala Leu Ala Gly Gly Arg Phe  
 35 40 45  
 Asp Ala His Asp Phe Val Gly Gly Val Leu Ser Ala Gly Ala Ala Ala  
 50 55 60  
 Val Val Val Ser Arg Glu Asp Cys Ala Ala Leu Gly Gly Ala Leu Lys  
 65 70 75 80  
 Val Asp Asp Thr Leu Ala Ala Leu Gln Thr Leu Ala Lys Ala Trp Arg  
 85 90 95  
 Asp Asn Val Asn Pro Phe Val Phe Gly Ile Thr Gly Ser Gly Gly Lys  
 100 105 110  
 Thr Thr Val Lys Glu Met Leu Ala Ala Val Leu Arg Arg Arg Phe Gly  
 115 120 125  
 Asp Asp Ala Val Ser Ala Thr Ala Gly Asn Phe Asn Asn His Ile Gly  
 130 135 140  
 Leu Pro Leu Thr Leu Leu Lys Leu Asn Glu Lys His Arg Tyr Ala Val  
 145 150 155 160  
 Ile Glu Met Gly Met Asn His Phe Gly Glu Leu Ala Val Leu Thr Gln  
 165 170 175  
 Ile Ala Lys Pro Asp Ala Ala Leu Val Asn Asn Ala Leu Arg Ala His  
 180 185 190  
 Val Gly Cys Gly Phe Asp Gly Val Gly Asp Ile Ala Lys Ala Lys Ser  
 195 200 205  
 Glu Ile Tyr Ala Gly Leu Cys Ser Asp Gly Met Ala Leu Ile Pro Gln  
 210 215 220  
 Glu Asp Ala Asn Met Ala Val Phe Lys Thr Ala Thr Phe Asn Leu Asn  
 225 230 235 240  
 Thr Cys Thr Phe Gly Val Asp Ser Gly Asp Val Arg Ala Glu Asn Ile  
 245 250 255  
 Val Leu Lys Pro Leu Ser Cys Glu Phe Asp Leu Val Cys Gly Asp Glu  
 260 265 270  
 Arg Thr Ala Val Val Leu Pro Val Pro Gly Arg His Asn Val His Asn  
 275 280 285  
 Ala Ala Ala Ala Ala Ala Leu Ala Leu Ala Ala Gly Leu Ser Leu Asn  
 290 295 300  
 Asp Val Ala Glu Gly Leu Gln Gly Phe Ser Asn Ile Lys Gly Arg Leu  
 305 310 315 320

Asn Val Lys Ala Gly Ile Lys Gly Ala Thr Leu Ile Asp Asp Thr Tyr  
325 330 335

Asn Ala Asn Pro Asp Ser Met Lys Ala Ala Val Asp Val Leu Ala Arg  
340 345 350

Met Pro Ala Pro Arg Ile Phe Val Met Gly Asp Met Gly Glu Leu Gly  
355 360 365

Glu Asp Glu Ala Ala Ala Met His Ala Glu Val Gly Ala Tyr Ala Arg  
370 375 380

Asp Gln Gly Ile Glu Ala Ala Tyr Phe Val Gly Asp Asn Ser Val Glu  
385 390 395 400

Ala Ala Glu Lys Phe Gly Ala Asp Gly Leu Trp Phe Ala Ala Lys Asp  
405 410 415

Pro Leu Ile Gln Val Leu Ser His Asp Leu Pro Glu Arg Ala Thr Val  
420 425 430

Leu Val Lys Gly Ser Arg Phe Met Gln Met Glu Glu Val Val Glu Ala  
435 440 445

Leu Glu Asp Lys  
450

<210> 249

<211> 1368

<212> DNA

<213> Neisseria meningitidis

<400> 249

atgaaaccac tggacctaaa ttcatctgc caagccctca agcttccgat gccgtctgaa 60  
agcaaaccgc tgtcgcgcgc cgtaaccgac agccgcgaca tccgcgcggg cgatgtgttt 120  
ttcgatttgg cgggcgagcg gtttgacgcg catgattttg ttgaagacgt attggctgct 180  
ggtgcgcgcg cggttgttgt ttgcgcgcga gattgtgctg caatggatgg cgcgttgaaa 240  
gtcgatgaca cgcttgccgc attgcaaacg ctggcaaagg cgtggcgtga aaatgtgaat 300  
ccgttttgtt tccgcattac cggttcgggc ggcaagacga cggatgaagg aatgctggct 360  
gcggtattgc gccgcgcttt cggcgatgat gccgtgttgg cgacggcagg caacttcaac 420  
aaccatatcg gattgccgct gactttgttg aagttaaaccg aaaaacaccg ctatgccgtg 480  
attgaaatgg gcatgaacca ttccggcgaa ctggcggttt taacgcamat cgccaaacca 540  
aatgccgcat tggatcaaca cgcctatgcg gcccatgtcg gctgcggttt cgacggagtg 600  
ggcgatattg ccaaagcgaa aagcgagatt taccaagggt tatgttcaga cggcattgca 660  
ctgattcctc aagaagatgc caatatggct gtcttcaaaa cggcaacgct taatttgaat 720  
acgcgcactt tcggcatcga tagcggcgat gttcacgcgc aaaatattgt gctgaaaccg 780  
ttgtcgtgcg aatttgattt ggtgtgcggc gatgagcgcg ccgccgtggt gctgcctgtt 840  
cccgccgcgc acaatgtcca caacgccgcg gctgcgcgcg cgctggcttt ggctgcgggt 900  
ttgagtttga acgatgtggc ggaaggtttg aaaggcttca gcaatatcaa aggcgctctg 960  
aacgtcaaat ccggaatcaa gggcgcaacc ctgattgacg atacttataa tgcgaaccct 1020  
gacagcatga aagctgcgat tgacgtgttg gcgcgtatgc ctgcgcgcgc tattttcgtg 1080  
atgggcgata tgggcgaact gggcgaaact ggcgaggacg aagccgcgcg tatgcacgcc 1140  
gaagtcggcg cgtatgcccg cgaccaaggc atcgaagcgg cttattttgt cggcgacaac 1200

agcgtcgaag cggcggaaaa atttggcgcg gacggtttgt ggttcgccgc caaagaccgc 1260

ttgattcaag tgttgcgcca cgatttgccc gaacgcgcca ccgtgttggt gaaaggttcg 1320  
 cgctttatgc agatggaaga agtggtcgag gcattggagg ataagtga 1368

<210> 250  
 <211> 455  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 250  
 Met Lys Pro Leu Asp Leu Asn Phe Ile Cys Gln Ala Leu Lys Leu Pro  
 1 5 10 15  
 Met Pro Ser Glu Ser Lys Pro Val Ser Arg Ile Val Thr Asp Ser Arg  
 20 25 30  
 Asp Ile Arg Ala Gly Asp Val Phe Phe Ala Leu Ala Gly Glu Arg Phe  
 35 40 45  
 Asp Ala His Asp Phe Val Glu Asp Val Leu Ala Ala Gly Ala Ala Ala  
 50 55 60  
 Val Val Val Ser Arg Glu Asp Cys Ala Ala Met Asp Gly Ala Leu Lys  
 65 70 75 80  
 Val Asp Asp Thr Leu Ala Ala Leu Gln Thr Leu Ala Lys Ala Trp Arg  
 85 90 95  
 Glu Asn Val Asn Pro Phe Val Phe Gly Ile Thr Gly Ser Gly Gly Lys  
 100 105 110  
 Thr Thr Val Lys Glu Met Leu Ala Ala Val Leu Arg Arg Arg Phe Gly  
 115 120 125  
 Asp Asp Ala Val Leu Ala Thr Ala Gly Asn Phe Asn Asn His Ile Gly  
 130 135 140  
 Leu Pro Leu Thr Leu Leu Lys Leu Asn Glu Lys His Arg Tyr Ala Val  
 145 150 155 160  
 Ile Glu Met Gly Met Asn His Phe Gly Glu Leu Ala Val Leu Thr Xaa  
 165 170 175  
 Ile Ala Lys Pro Asn Ala Ala Leu Val Asn Asn Ala Met Arg Ala His  
 180 185 190  
 Val Gly Cys Gly Phe Asp Gly Val Gly Asp Ile Ala Lys Ala Lys Ser  
 195 200 205  
 Glu Ile Tyr Gln Gly Leu Cys Ser Asp Gly Ile Ala Leu Ile Pro Gln  
 210 215 220  
 Glu Asp Ala Asn Met Ala Val Phe Lys Thr Ala Thr Leu Asn Leu Asn  
 225 230 235 240  
 Thr Arg Thr Phe Gly Ile Asp Ser Gly Asp Val His Ala Glu Asn Ile  
 245 250 255

Val Leu Lys Pro Leu Ser Cys Glu Phe Asp Leu Val Cys Gly Asp Glu  
 260 265 270  
 Arg Ala Ala Val Val Leu Pro Val Pro Gly Arg His Asn Val His Asn  
 275 280 285  
 Ala Ala Ala Ala Ala Ala Leu Ala Leu Ala Ala Gly Leu Ser Leu Asn  
 290 295 300  
 Asp Val Ala Glu Gly Leu Lys Gly Phe Ser Asn Ile Lys Gly Arg Leu  
 305 310 315 320  
 Asn Val Lys Ser Gly Ile Lys Gly Ala Thr Leu Ile Asp Asp Thr Tyr  
 325 330 335  
 Asn Ala Asn Pro Asp Ser Met Lys Ala Ala Ile Asp Val Leu Ala Arg  
 340 345 350  
 Met Pro Ala Pro Arg Ile Phe Val Met Gly Asp Met Gly Glu Leu Gly  
 355 360 365  
 Glu Leu Gly Glu Asp Glu Ala Ala Ala Met His Ala Glu Val Gly Ala  
 370 375 380  
 Tyr Ala Arg Asp Gln Gly Ile Glu Ala Ala Tyr Phe Val Gly Asp Asn  
 385 390 395 400  
 Ser Val Glu Ala Ala Glu Lys Phe Gly Ala Asp Gly Leu Trp Phe Ala  
 405 410 415  
 Ala Lys Asp Pro Leu Ile Gln Val Leu Arg His Asp Leu Pro Glu Arg  
 420 425 430  
 Ala Thr Val Leu Val Lys Gly Ser Arg Phe Met Gln Met Glu Glu Val  
 435 440 445  
 Val Glu Ala Leu Glu Asp Lys  
 450 455

<210> 251

<211> 1359

<212> DNA

<213> Neisseria meningitidis

<400> 251

atgaaaccac tggacctaaa tttcatctgc caagccctca agcttccgat gccgtctgaa 60  
 agcaaaccgc tgcgcgcgat cgtaaccgac agccgcgaca tccgcgcggg cgatgtgttt 120  
 ttcgatttgg cgggcgggcg gtttgatgcg catgattttg ttgaagacgt attggctgcg 180  
 ggtgcggcgg cggttggtgt ttcgcgcgaa gattgcgttg caatggatgg cgcgttgaaa 240  
 gtcgatgaca cgcttaccgc gttgcaaatt ttggcgaagg cgtggcgcga gaatgtgaac 300  
 ccgtttgtgt tcggtattac cggctcgggc ggcaagacga cggatgaagg aatgttggct 360  
 gcggtattgc gccgccgttt cggcgataat gccgttttgg cgacggcagg caacttcaac 420  
 aaccacatcg gattgccgtt gactttgttg aaattaaacg aaaaacaccg ctatgccgtg 480  
 attgaaatgg gtatgaacca ttttgcgcaa ctggcggttt tgacacaaat cgccaaaccc 540  
 gatgccgcgt tgggtcaacaa cgccatgcmc gcccatgtcg gctgcggttt cgacggagtg 600

```

ggcgatattg ccaaagcgaa aagcgagatt tatcaaggct tatgttcaga cggcatggcg 660
ctgattcctc aagaagatgc caatatggct gtcttcaaaa cggcaacgct taatttgaat 720
acgcgcactt tcggcatcga tagcggcgat gtccacgcgg aaaatatcgt gctgaaaccg 780
ttgtcgtgcg aatttgattt ggtgtgcggc aacgagtgcg cagccgtggt tctgcccgtt 840
cccgcccgcc acaatgtcca caacgccgcc gccgccgccg cgctgtcttt ggctgcaggt 900
ttgagtttga acgatgtggc ggaaggtttg aaaggcttca gcaatatcaa aggccgtctg 960
aacgtcaaat ccggaatcaa gggcgcaacc ctgattgacg atacttataa tgcgaaccct 1020
gacagcatga aagctgcggt tgacgtggtg gcgcgtatgc ctgcgcccg tattttcgtg 1080
atgggcgata tgggcgaact gggtgaggac gaagccgccg ccatgcacgc cgaagtcggc 1140
gcgtacgccc gcgaccaagg catcgaagcg gcttattttg tcggcgacaa cagcgtcgaa 1200
gcggcggaaa aatttggcgc ggacggtttg tggttcgccg ccaaagacct gttgattcaa 1260
gtgttgccgc acgatttggc cgaacgcgcc accgtgttgg tgaaagggtc gcgctttatg 1320
cagatggaag aagtggtcga ggcattggag gataagtga 1359

```

<210> 252

<211> 452

<212> PRT

<213> Neisseria meningitidis

<400> 252

```

Met Lys Pro Leu Asp Leu Asn Phe Ile Cys Gln Ala Leu Lys Leu Pro
  1             5             10             15

Met Pro Ser Glu Ser Lys Pro Val Ser Arg Ile Val Thr Asp Ser Arg
      20             25             30

Asp Ile Arg Ala Gly Asp Val Phe Phe Ala Leu Ala Gly Gly Arg Phe
      35             40             45

Asp Ala His Asp Phe Val Glu Asp Val Leu Ala Ala Gly Ala Ala Ala
      50             55             60

Val Val Val Ser Arg Glu Asp Cys Val Ala Met Asp Gly Ala Leu Lys
      65             70             75             80

Val Asp Asp Thr Leu Thr Ala Leu Gln Met Leu Ala Lys Ala Trp Arg
      85             90             95

Glu Asn Val Asn Pro Phe Val Phe Gly Ile Thr Gly Ser Gly Gly Lys
      100            105            110

Thr Thr Val Lys Glu Met Leu Ala Ala Val Leu Arg Arg Arg Phe Gly
      115            120            125

Asp Asn Ala Val Leu Ala Thr Ala Gly Asn Phe Asn Asn His Ile Gly
      130            135            140

Leu Pro Leu Thr Leu Leu Lys Leu Asn Glu Lys His Arg Tyr Ala Val
      145            150            155            160

Ile Glu Met Gly Met Asn His Phe Gly Glu Leu Ala Val Leu Thr Gln
      165            170            175

Ile Ala Lys Pro Asp Ala Ala Leu Val Asn Asn Ala Met Arg Ala His
      180            185            190

```

Val Gly Cys Gly Phe Asp Gly Val Gly Asp Ile Ala Lys Ala Lys Ser  
 195 200 205  
 Glu Ile Tyr Gln Gly Leu Cys Ser Asp Gly Met Ala Leu Ile Pro Gln  
 210 215 220  
 Glu Asp Ala Asn Met Ala Val Phe Lys Thr Ala Thr Leu Asn Leu Asn  
 225 230 235 240  
 Thr Arg Thr Phe Gly Ile Asp Ser Gly Asp Val His Ala Glu Asn Ile  
 245 250 255  
 Val Leu Lys Pro Leu Ser Cys Glu Phe Asp Leu Val Cys Gly Asn Glu  
 260 265 270  
 Cys Ala Ala Val Val Leu Pro Val Pro Gly Arg His Asn Val His Asn  
 275 280 285  
 Ala Ala Ala Ala Ala Ala Leu Ser Leu Ala Ala Gly Leu Ser Leu Asn  
 290 295 300  
 Asp Val Ala Glu Gly Leu Lys Gly Phe Ser Asn Ile Lys Gly Arg Leu  
 305 310 315 320  
 Asn Val Lys Ser Gly Ile Lys Gly Ala Thr Leu Ile Asp Asp Thr Tyr  
 325 330 335  
 Asn Ala Asn Pro Asp Ser Met Lys Ala Ala Val Asp Val Leu Ala Arg  
 340 345 350  
 Met Pro Ala Pro Arg Ile Phe Val Met Gly Asp Met Gly Glu Leu Gly  
 355 360 365  
 Glu Asp Glu Ala Ala Ala Met His Ala Glu Val Gly Ala Tyr Ala Arg  
 370 375 380  
 Asp Gln Gly Ile Glu Ala Ala Tyr Phe Val Gly Asp Asn Ser Val Glu  
 385 390 395 400  
 Ala Ala Glu Lys Phe Gly Ala Asp Gly Leu Trp Phe Ala Ala Lys Asp  
 405 410 415  
 Pro Leu Ile Gln Val Leu Arg His Asp Leu Pro Glu Arg Ala Thr Val  
 420 425 430  
 Leu Val Lys Gly Ser Arg Phe Met Gln Met Glu Glu Val Val Glu Ala  
 435 440 445  
 Leu Glu Asp Lys  
 450

<210> 253  
 <211> 744  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 253

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atgtggttgt tgaagttgcc tgccgtcgcc gaaacggcat catcgccgaa acggcggcgc 60
aataccgcag ccagcatctc cttcaccgtc gtcttgccgc ccgaaccggt aatgccgaac 120
acaaacgggt tcacattatc gcgccacgcc ttcgccaacg ttgcaacgc ggcaagcgtg 180
tcatcgactt tcaacgcgcc gcccaaagcc gcgcaatctt cgcgcgaaac cacaaccgcc 240
gccgcgcccc cagacaatac gcctccaaca aaatcatgcg cgtaaaaccg cccgcccgcc 300
aatgcgaaaa acacatcgcc ttcccgaata tcgcggctgt cggttacgat gcgcgacacg 360
ggtttgtttt cagacggcat cggaagcttg agggcttggc agatgaaatt taggtccagt 420
ggtttcatat ttgctttcgt taatattcgg gcggcggaca catcggtagc ggctgatttt 480
tttatcgctt gttttgctgt ggtaaaacac agattatctt cccattctca ttcggcattt 540
tttctgtacg tatcattttt tagacgtatt tttagccgat ttgccttttc ccgcatacca 600
cggcgcgggg tcgtcggact gtctgtcgat aaaggcaagg ttattgcctt cgcccggcac 660
atcggggaca ttccccaaa aatcatagcc gtcacgggc aactcgtcgg tttcgatacc 720
cgtccaactg ccgaatccgc gtaa 744
```

<210> 254

<211> 247

<212> PRT

<213> Neisseria gonorrhoeae

<400> 254

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Met Trp Leu Leu Lys Leu Pro Ala Val Ala Glu Thr Ala Ser Ser Pro
  1             5             10             15

Lys Arg Arg Arg Asn Thr Ala Ala Ser Ile Ser Phe Thr Val Val Leu
      20             25             30

Pro Pro Glu Pro Val Met Pro Asn Thr Asn Gly Phe Thr Leu Ser Arg
      35             40             45

His Ala Phe Ala Asn Val Cys Asn Ala Ala Ser Val Ser Ser Thr Phe
      50             55             60

Asn Ala Pro Pro Lys Ala Ala Gln Ser Ser Arg Glu Thr Thr Thr Ala
      65             70             75             80

Ala Ala Pro Ala Asp Asn Thr Pro Pro Thr Lys Ser Cys Ala Ser Asn
      85             90             95

Arg Pro Pro Ala Asn Ala Lys Asn Thr Ser Pro Ser Arg Ile Ser Arg
      100            105            110

Leu Ser Val Thr Met Arg Asp Thr Gly Leu Phe Ser Asp Gly Ile Gly
      115            120            125

Ser Leu Arg Ala Trp Gln Met Lys Phe Arg Ser Ser Gly Phe Ile Phe
      130            135            140

Ala Phe Val Asn Ile Arg Ala Ala Asp Thr Ser Val Ala Ala Asp Phe
      145            150            155            160

Phe Ile Ala Cys Phe Ala Val Val Lys His Arg Leu Phe Ser His Ser
      165            170            175

His Ser Ala Phe Phe Leu Tyr Val Ser Phe Phe Arg Arg Ile Phe Ser
      180            185            190
```



Arg Phe Ala Phe Ser Arg Ile Pro Arg Arg Gly Val Val Gly Leu Ser  
 195 200 205

Val Asp Lys Gly Lys Val Ile Ala Phe Ala Arg His Ile Gly Asp Ile  
 210 215 220

Pro Pro Lys Ile Ile Ala Val Ile Gly Gln Leu Val Gly Phe Asp Thr  
 225 230 235 240

Arg Pro Thr Ala Glu Ser Ala  
 245

<210> 255

<211> 744

<212> DNA

<213> Neisseria meningitidis

<400> 255

atgnngttgt tgaagttgcc tgccgtcgcc aacacggcat catcgccgaa acggcggcgc 60  
 aataccgcag ccagcatttc cttcaccgtc gtcttgccgc ccgaaccggt aatgccgaac 120  
 acaaacggat tcacattttc acgccacgcc tttgccagcg tttgcaatgc ggcaagcgtg 180  
 tcatcgactt tcaacgcgcc atccattgca gcacaatctt cgcgcgaaac cacaaccgcc 240  
 gccgcaccag cagccaatac gtcttcaaca aaatcatgcg cgtcaaaccg ctgcccgcgc 300  
 aatgcgaaaa acacatcgcc cgcgcgggatg tcgcggctgt cggttacgat gcgcgacacg 360  
 ggtttgcttt cagacggcat cggaagcttg agggcttggc agatgaaatt taggtccagt 420  
 ggtttcatat ttactttcgt taatattcgg gcggcggaca catcggtagc ggctgatttt 480  
 tttatcgctt gttttgctgt ggtaaaacac agattatttt cccatttctc ttcggsattt 540  
 tttctgtacg tatcattttt tagacgtatt tttagtcgat ttgccttttc ccgcatacca 600  
 cggcgcgggg tcgtcgggca gtccgtcgat aaaggcaagg ttattgcctt cgccctgcac 660  
 atcgggaaca ttccccaaa aatcatagcc gtcacgggc aactcgtcgg tttcgatacc 720  
 cgtccaactg ccgaatccgc gtaa 744

<210> 256

<211> 247

<212> PRT

<213> Neisseria meningitidis

<400> 256

Met Xaa Leu Leu Lys Leu Pro Ala Val Ala Asn Thr Ala Ser Ser Pro  
 1 5 10 15

Lys Arg Arg Arg Asn Thr Ala Ala Ser Ile Ser Phe Thr Val Val Leu  
 20 25 30

Pro Pro Glu Pro Val Met Pro Asn Thr Asn Gly Phe Thr Phe Ser Arg  
 35 40 45

His Ala Phe Ala Ser Val Cys Asn Ala Ala Ser Val Ser Ser Thr Phe  
 50 55 60

Asn Ala Pro Ser Ile Ala Ala Gln Ser Ser Arg Glu Thr Thr Thr Ala  
 65 70 75 80

Ala Ala Pro Ala Ala Asn Thr Ser Ser Thr Lys Ser Cys Ala Ser Asn

	85		90		95
Arg Ser Pro	Ala Asn Ala Lys Asn Thr Ser Pro	Ala Arg Met Ser Arg			
	100	105	110		
Leu Ser Val Thr Met Arg Asp Thr Gly Leu Leu Ser Asp Gly Ile Gly					
	115	120	125		
Ser Leu Arg Ala Trp Gln Met Lys Phe Arg Ser Ser Gly Phe Ile Phe					
	130	135	140		
Thr Phe Val Asn Ile Arg Ala Ala Asp Thr Ser Val Ala Ala Asp Phe					
	145	150	155	160	
Phe Ile Ala Cys Phe Ala Val Val Lys His Arg Leu Phe Ser His Ser					
	165	170	175		
His Ser Xaa Phe Phe Leu Tyr Val Ser Phe Phe Arg Arg Ile Phe Ser					
	180	185	190		
Arg Phe Ala Phe Ser Arg Ile Pro Arg Arg Gly Val Val Gly Gln Ser					
	195	200	205		
Val Asp Lys Gly Lys Val Ile Ala Phe Ala Leu His Ile Gly Asn Ile					
	210	215	220		
Pro Pro Lys Ile Ile Ala Val Ile Gly Gln Leu Val Gly Phe Asp Thr					
	225	230	235	240	
Arg Pro Thr Ala Glu Ser Ala					
	245				

<210> 257  
 <211> 744  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 257  
 atgtggttgt tgaagttgcc tgccgtcgcc aaaacggcat tatcgccgaa acggcggcgc 60  
 aataccgcag ccaacatttc cttcaccgtc gtcttgccgc ccgagccggt aataccgaac 120  
 acaaacgggt tcacattctc gcgccacgcc ttgcgcaaca ttgcaacgc ggtaagcgtg 180  
 tcatcgactt tcaacgcgcc atccattgca acgcaatctt cgcgcgaaac cacaaccgcc 240  
 gccgcacccg cagccaatac gtcttcaaca aaatcatgcg catcaaaccg cccgcccgcc 300  
 aatgcgaaaa acacatcgcc cgcgcggtatg tcgcggctgt cggttacgat gcgcgacacg 360  
 ggtttgcttt cagacggcat cggaagcttg agggcttggc agatgaaatt taggtccagt 420  
 ggtttcatat ttactttcgt taatattcgg gcggcggaaca catcggtagc ggctgatttt 480  
 tttatcgctt gttttgctgt ggtaaaacac agattatttt cccattctca ttcggcattt 540  
 tttctgtacg tatcattttt tagacgtatt tttagtcgat ttgccttttc ccgcatacca 600  
 cggcgcgggg tcgtcgggca gtccgtcgat aaaggcaagg ttattgcctt cgccctgcac 660  
 atcgggaaca ttcccccaaa aatcatagcc gtcacgaggc aactcgtcgg tttcgatacc 720  
 cgtccaactg ccgaatccgc gtaa 744

<210> 258  
 <211> 247  
 <212> PRT

<213> Neisseria meningitidis

<400> 258

Met Trp Leu Leu Lys Leu Pro Ala Val Ala Lys Thr Ala Leu Ser Pro  
1 5 10 15  
Lys Arg Arg Arg Asn Thr Ala Ala Asn Ile Ser Phe Thr Val Val Leu  
20 25 30  
Pro Pro Glu Pro Val Ile Pro Asn Thr Asn Gly Phe Thr Phe Ser Arg  
35 40 45  
His Ala Phe Ala Asn Ile Cys Asn Ala Val Ser Val Ser Ser Thr Phe  
50 55 60  
Asn Ala Pro Ser Ile Ala Thr Gln Ser Ser Arg Glu Thr Thr Thr Ala  
65 70 75 80  
Ala Ala Pro Ala Ala Asn Thr Ser Ser Thr Lys Ser Cys Ala Ser Asn  
85 90 95  
Arg Pro Pro Ala Asn Ala Lys Asn Thr Ser Pro Ala Arg Met Ser Arg  
100 105 110  
Leu Ser Val Thr Met Arg Asp Thr Gly Leu Leu Ser Asp Gly Ile Gly  
115 120 125  
Ser Leu Arg Ala Trp Gln Met Lys Phe Arg Ser Ser Gly Phe Ile Phe  
130 135 140  
Thr Phe Val Asn Ile Arg Ala Ala Asp Thr Ser Val Ala Ala Asp Phe  
145 150 155 160  
Phe Ile Ala Cys Phe Ala Val Val Lys His Arg Leu Phe Ser His Ser  
165 170 175  
His Ser Ala Phe Phe Leu Tyr Val Ser Phe Phe Arg Arg Ile Phe Ser  
180 185 190  
Arg Phe Ala Phe Ser Arg Ile Pro Arg Arg Gly Val Val Gly Gln Ser  
195 200 205  
Val Asp Lys Gly Lys Val Ile Ala Phe Ala Leu His Ile Gly Asn Ile  
210 215 220  
Pro Pro Lys Ile Ile Ala Val Ile Gly Gln Leu Val Gly Phe Asp Thr  
225 230 235 240  
Arg Pro Thr Ala Glu Ser Ala  
245

<210> 259

<211> 696

<212> DNA

<213> Neisseria gonorrhoeae

<400> 259

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atgaaacaat cgcgccgaat aaaaaatatg gatcagacat taaaaaatac attgggcatt 60
tgcgcgcttt tagccttttg ttttggcgcg gccatcgcat caggttatca cttggaatat 120
gaatacggct accgttatcc tgccgtgggc gctttgctt cggttgtatt tttattatta 180
ttggcacgcg gcttcccgcg cgtttcttca gttgttttac tgatttacgt cggcacaacc 240
gccctatatt tgccggtcgg ctggctgtat ggtgcgcctt cttatcagat agtcggttcg 300
atattggaaa gcaatcctgc cgaggcgcggt gaatttgctg gcaatcttcc cgggtcgctt 360
tattttgtgc aggcattatt tttcattttt ggcttgacag tttggaaata ttgtgtatct 420
gtgggggtat ttgctgacgt aaaaaactat aaacgtcgca gcaaaatatg gctgaccata 480
ttattgactt tgattttgtc ctgcgcggtg atggagaaaa tcgccggcga taaagattgg 540
cgagaacctg atgccggcct gttgttgaat attttcgacc tgtattacga cttggctttc 600
cgcgccggca caatatgccg ccaagcgcg cccacattttg gaagcagcaa aaaaagcgctc 660
aacatggcat atccgccaac ttgcgcccaa gtataa 696
```

<210> 260

<211> 231

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 260

```
Met Lys Gln Ser Ala Arg Ile Lys Asn Met Asp Gln Thr Leu Lys Asn
  1             5             10             15
```

```
Thr Leu Gly Ile Cys Ala Leu Leu Ala Phe Cys Phe Gly Ala Ala Ile
      20             25             30
```

```
Ala Ser Gly Tyr His Leu Glu Tyr Glu Tyr Gly Tyr Arg Tyr Ser Ala
      35             40             45
```

```
Val Gly Ala Leu Ala Ser Val Val Phe Leu Leu Leu Leu Ala Arg Gly
      50             55             60
```

```
Phe Pro Arg Val Ser Ser Val Val Leu Leu Ile Tyr Val Gly Thr Thr
      65             70             75             80
```

```
Ala Leu Tyr Leu Pro Val Gly Trp Leu Tyr Gly Ala Pro Ser Tyr Gln
      85             90             95
```

```
Ile Val Gly Ser Ile Leu Glu Ser Asn Pro Ala Glu Ala Arg Glu Phe
     100             105             110
```

```
Val Gly Asn Leu Pro Gly Ser Leu Tyr Phe Val Gln Ala Leu Phe Phe
     115             120             125
```

```
Ile Phe Gly Leu Thr Val Trp Lys Tyr Cys Val Ser Val Gly Val Phe
     130             135             140
```

```
Ala Asp Val Lys Asn Tyr Lys Arg Arg Ser Lys Ile Trp Leu Thr Ile
     145             150             155             160
```

```
Leu Leu Thr Leu Ile Leu Ser Cys Ala Val Met Glu Lys Ile Ala Gly
     165             170             175
```

```
Asp Lys Asp Trp Arg Glu Pro Asp Ala Gly Leu Leu Leu Asn Ile Phe
     180             185             190
```

Asp Leu Tyr Tyr Asp Leu Ala Phe Arg Ala Gly Thr Ile Cys Arg Gln  
195 200 205

Ala Arg Pro His Phe Gly Ser Ser Lys Lys Ser Val Asn Met Ala Tyr  
210 215 220

Pro Pro Thr Cys Ala Gln Val  
225 230

<210> 261

<211> 694

<212> DNA

<213> Neisseria meningitidis

<400> 261

atgaaacaat ccgcccgaat aaaaatatga atcagacatt actttataca ttgggcattt 60  
gcgcgcctttt aacctttnnn nnnnnnnnnn nnnnnnnnnn nnnntatcac ccngaatatg 120  
aatacggcta ccgtattct gccgtgggtg ctttggttc ggttgattt ttattattat 180  
tggcacgcgg tttccgcgc gtttcttcag ttgttttact gatttacgtc ggcacaaccg 240  
ccctatattt gccggtcggc tggctgtatg gtgcgccgtc ttatcagata gtcggttcga 300  
tattggaaag caatcctgcc gaggcgcgtg aatttgtcgg caatcttccc gggtcgcctt 360  
atthttgtgca ggcattattt ttcatttttg gcttgacagt ttggaaatat tgtgtatcgg 420  
gggggggtatt tgctgacgta aaaaactata aacgccgcag caaaatatgg ctgactatat 480  
tattgacttt gattttgtcc tgcgcgggtg tggataaaat cgccagcgat aaagatttgc 540  
gagaacctga tgccggcctg ttgttgaata ttttcgacct gtattacgat ttggcttccg 600  
cgccggcaca atatgccgcc aagcgcgcc acatttttga agcagcaaaa aaagcgtcaa 660  
catggcatat ccgtcatgtt gcgcccaagt ataa 694

<210> 262

<211> 231

<212> PRT

<213> Neisseria meningitidis

<400> 262

Met Lys Gln Ser Ala Arg Ile Lys Xaa Met Asn Gln Thr Leu Leu Tyr  
1 5 10 15

Thr Leu Gly Ile Cys Ala Leu Leu Thr Phe Xaa Xaa Xaa Xaa Xaa Xaa  
20 25 30

Xaa Xaa Xaa Tyr His Pro Glu Tyr Glu Tyr Gly Tyr Arg Tyr Ser Ala  
35 40 45

Val Gly Ala Leu Ala Ser Val Val Phe Leu Leu Leu Leu Ala Arg Gly  
50 55 60

Phe Pro Arg Val Ser Ser Val Val Leu Leu Ile Tyr Val Gly Thr Thr  
65 70 75 80

Ala Leu Tyr Leu Pro Val Gly Trp Leu Tyr Gly Ala Pro Ser Tyr Gln  
85 90 95

Ile Val Gly Ser Ile Leu Glu Ser Asn Pro Ala Glu Ala Arg Glu Phe  
100 105 110

Val Gly Asn Leu Pro Gly Ser Leu Tyr Phe Val Gln Ala Leu Phe Phe  
115 120 125

Ile Phe Gly Leu Thr Val Trp Lys Tyr Cys Val Ser Gly Gly Val Phe  
130 135 140

Ala Asp Val Lys Asn Tyr Lys Arg Arg Ser Lys Ile Trp Leu Thr Ile  
145 150 155 160

Leu Leu Thr Leu Ile Leu Ser Cys Ala Val Met Asp Lys Ile Ala Ser  
165 170 175

Asp Lys Asp Leu Arg Glu Pro Asp Ala Gly Leu Leu Leu Asn Ile Phe  
180 185 190

Asp Leu Tyr Tyr Asp Leu Ala Xaa Arg Ala Gly Thr Ile Cys Arg Gln  
195 200 205

Ala Arg Pro His Phe Gly Ser Ser Lys Lys Ser Val Asn Met Ala Tyr  
210 215 220

Pro Ser Cys Cys Ala Gln Val  
225 230

<210> 263  
<211> 695  
<212> DNA  
<213> Neisseria meningitidis

<400> 263  
atgaaacaat cgcgccgaat aaaaaaatatg gatcagacat taaaaaatac attgggcatt 60  
tgcgcgcttt tagccttttg ttttggcgcg gccatcgcat caggttatca cttggaatat 120  
gaatacggct accgttattc tgccgtgggt gctttggctt cggttgtatt tttattatta 180  
ttggcacgcg gtttccgcg cgtttcttca gttgttttac tgatttacgt cggcacaacc 240  
gccctatatt tgccggtcgg ctggctgtat ggtgcgcgct cttatcagat agtcggttcg 300  
atattggaat gcaatcctgc cgaggcgcg gaatttgtcg gcaatcttcc cgggtcgcctt 360  
tattttgtgc aggcattatt tttcattttt ggcttgacag tttggagata ttgtgtatcg 420  
ggggggggtat ttgctgacgt aaaaaactat aaacgccgca gcaaaatatg gctgactata 480  
ttattgactt tgattttgtc ctgcgcggtg atggataaaa tcgccagcga taaagatttg 540  
cgagaacctg atgccggcct gttgttgaat attttcgacc tgtattacga tttggcttcc 600  
gcgccggcac aatatgccgc caagcgcgcc cacatttttg aagcagcaaa aaaagcgtca 660  
acatggcata tccgtcatgt tgcgcccaag tataa 695

<210> 264  
<211> 231  
<212> PRT  
<213> Neisseria meningitidis

<400> 264  
Met Lys Gln Ser Ala Arg Ile Lys Asn Met Asp Gln Thr Leu Lys Asn  
1 5 10 15

Thr Leu Gly Ile Cys Ala Leu Leu Ala Phe Cys Phe Gly Ala Ala Ile  
20 25 30

Ala Ser Gly Tyr His Leu Glu Tyr Glu Tyr Gly Tyr Arg Tyr Ser Ala  
35 40 45

Val Gly Ala Leu Ala Ser Val Val Phe Leu Leu Leu Leu Ala Arg Gly  
50 55 60

Phe Pro Arg Val Ser Ser Val Val Leu Leu Ile Tyr Val Gly Thr Thr  
65 70 75 80

Ala Leu Tyr Leu Pro Val Gly Trp Leu Tyr Gly Ala Pro Ser Tyr Gln  
85 90 95

Ile Val Gly Ser Ile Leu Glu Ser Asn Pro Ala Glu Ala Arg Glu Phe  
100 105 110

Val Gly Asn Leu Pro Gly Ser Leu Tyr Phe Val Gln Ala Leu Phe Phe  
115 120 125

Ile Phe Gly Leu Thr Val Trp Arg Tyr Cys Val Ser Gly Gly Val Phe  
130 135 140

Ala Asp Val Lys Asn Tyr Lys Arg Arg Ser Lys Ile Trp Leu Thr Ile  
145 150 155 160

Leu Leu Thr Leu Ile Leu Ser Cys Ala Val Met Asp Lys Ile Ala Ser  
165 170 175

Asp Lys Asp Leu Arg Glu Pro Asp Ala Gly Leu Leu Leu Asn Ile Phe  
180 185 190

Asp Leu Tyr Tyr Asp Leu Ala Ser Xaa Ala Gly Thr Ile Cys Arg Gln  
195 200 205

Ala Arg Pro His Phe Gly Ser Ser Lys Lys Ser Val Asn Met Ala Tyr  
210 215 220

Pro Ser Cys Cys Ala Gln Val  
225 230

<210> 265

<211> 285

<212> DNA

<213> Neisseria gonorrhoeae

<400> 265

atgggcaaag ggcaggactt cacgcccctg cgcgacgcgt tgaaagataa ggcaaaaggc 60  
gtgttcctga tcggcgctga tgcgccgcaa atccgccgcg atttgacgg ctgcggcttg 120  
aacctgaccg actgcgtcac tttggaagag gcggttcaga cggcatacgc ccaagccgaa 180  
gcgggcgata ttgtcttgct cagccccgcc tgcgcgagtt tcgatatggt taaaggctac 240  
gcgcaccggt cggaagtgtt tatcgaagcg ttaaggctt tgtga 285

<210> 266

<211> 94

<212> PRT

<213> Neisseria gonorrhoeae

<400> 266

Met Gly Lys Gly Gln Asp Phe Thr Pro Leu Arg Asp Ala Leu Lys Asp  
1 5 10 15

Lys Ala Lys Gly Val Phe Leu Ile Gly Val Asp Ala Pro Gln Ile Arg  
20 25 30

Arg Asp Leu Asp Gly Cys Gly Leu Asn Leu Thr Asp Cys Val Thr Leu  
35 40 45

Glu Glu Ala Val Gln Thr Ala Tyr Ala Gln Ala Glu Ala Gly Asp Ile  
50 55 60

Val Leu Leu Ser Pro Ala Cys Ala Ser Phe Asp Met Phe Lys Gly Tyr  
65 70 75 80

Ala His Arg Ser Glu Val Phe Ile Glu Ala Phe Lys Ala Leu  
85 90

<210> 267

<211> 285

<212> DNA

<213> Neisseria meningitidis

<400> 267

atgggtaaag ggcaggactt cagccccctg cgcgatgcac tggtaggcaa ggcaaaaggc 60  
gtgttcttga ttggtgtcga tgcgcgcgcaa atccgcgcgcg atttgacgg ctgcggcttg 120  
aatatgaccg actgcgccac tttgggagaa gccgttcaga cggcatatgc ccaagccgaa 180  
gcaggcgata ttgtgttgct cagccccgcc tgcgcgagct ttgatatggt caaaggctac 240  
gcgcaccggt cggaagtgtt tatcgaagcg tttaaggctt tgtga 285

<210> 268

<211> 94

<212> PRT

<213> Neisseria meningitidis

<400> 268

Met Gly Lys Gly Gln Asp Phe Thr Pro Leu Arg Asp Ala Leu Val Gly  
1 5 10 15

Lys Ala Lys Gly Val Phe Leu Ile Gly Val Asp Ala Pro Gln Ile Arg  
20 25 30

Arg Asp Leu Asp Gly Cys Gly Leu Asn Met Thr Asp Cys Ala Thr Leu  
35 40 45

Gly Glu Ala Val Gln Thr Ala Tyr Ala Gln Ala Glu Ala Gly Asp Ile  
50 55 60

Val Leu Leu Ser Pro Ala Cys Ala Ser Phe Asp Met Phe Lys Gly Tyr  
65 70 75 80

Ala His Arg Ser Glu Val Phe Ile Glu Ala Phe Lys Ala Leu



<210> 269  
 <211> 285  
 <212> DNA  
 <213> *Neillia sinensis*

<400> 269  
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 gtgttcctga tcggtgtcga tgcgcgcgcaa atccgcgcgc atttgacggt ctgcgatctg 120  
 aatatgaccg actgcgccac tttggaagaa gcggttcaga aggcataatgc ccaagccgaa 180  
 gcggggcgata tcgtgctgct cagccccgcc tgcgcgagtt tcgatatggt taaaggctac 240  
 gcgcaccggt cggaagtgtt tatcggggcg ttttaaggctt tgtga 285

<210> 270  
 <211> 94  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 270  
 Met Gly Lys Gly Gln Asp Phe Thr Pro Leu Arg Asp Ala Leu Ala Gly  
 1 5 10 15  
 Lys Ala Lys Gly Val Phe Leu Ile Gly Val Asp Ala Pro Gln Ile Arg  
 20 25 30  
 Arg Asp Leu Asp Gly Cys Asp Leu Asn Met Thr Asp Cys Ala Thr Leu  
 35 40 45  
 Glu Glu Ala Val Gln Lys Ala Tyr Ala Gln Ala Glu Ala Gly Asp Ile  
 50 55 60  
 Val Leu Leu Ser Pro Ala Cys Ala Ser Phe Asp Met Phe Lys Gly Tyr  
 65 70 75 80  
 Ala His Arg Ser Glu Val Phe Ile Gly Ala Phe Lys Ala Leu  
 85 90

<210> 271  
 <211> 1192  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 271  
 atggtggtgc tgatgacggc gttcggcctg ctgatgattt attcggcttc tgtgtatttg 60  
 gcatcgaagg aaggcggcga tcagtttttc tatttgacca ggcaggcggg gttcgtcgtt 120  
 gccggcctta tagcgagcgg ttttttatgg tttctttgca ggatgaggac atggcggcgg 180  
 cttgtgccgt ggatttttgc cttatccggc ctgttgctgg tagccgtatt gattgccggg 240  
 cgcgaaatca atggcgcgac ccgttgata cctttgggtc cgttgaattt ccagccgacc 300  
 gagctgttca agctggcagt catcctttat ttggcaagcc tgttcacgcg ccgtgaagaa 360  
 gtgttgcgca gcatgaaaag tttgggttgg cagtcgattt ggcgggggac ggccaacctg 420  
 attatgtccg ccaccaatcc gcaggcacgt cgtgaaacat tagaaatgta cggccgtttc 480  
 cgggcgatca tcctgccgat tatgctggtg gcgttcggtt tgggtgctgat aatggtacag 540  
 ccggatttcg gttcgtttgt cgtcattacc gtcattacc ttggaatgct gtttctggca 600

ggattgccgt ggaaatattt ttttgtcctg gtaggcagcg tcttggggtgg gatgggtgctg 660  
 atgattaccg cgcctcccta ccgtgtgcag cgggtagtgg catttttgga cccgtggaaa 720  
 gaccgcagg gtgccggcta ccagcttacc cactctctga tggcaatcgg gcgcggagag 780  
 tggttcggta tgggttttggg tgcgagtttg agcaaacgcg gctttctgcc ggaagcgcag 840  
 accgatttta tttttgccat catcgctgaa gaattcggct tcttcgggat gtgcgtgctg 900  
 atattctgtt acggctggct ggtgggtgcgg gcgttttcca tcggcaagca gtcgcgcgat 960  
 ttgggtttga ctttcaacgc ctatatcgct tcgggtatcg gcatttgat cggtatccaa 1020  
 agtttcttca atatcgggtg gaacatcggg gctttgccga ccaaaggtct gacgctgccg 1080  
 ttgatgtcct atggcgggtc gtcagtcttt ttcagtctga tcagcatgat gctgctgttg 1140  
 cgtatcgatt atgaaaaccg ccagaaaatg cgcggttacc ggggtggagta aa 1192

<210> 272

<211> 396

<212> PRT

<213> Neisseria gonorrhoeae

<400> 272

Met	Val	Val	Leu	Met	Thr	Ala	Phe	Gly	Leu	Leu	Met	Ile	Tyr	Ser	Ala	
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Ser	Val	Tyr	Leu	Ala	Ser	Lys	Glu	Gly	Gly	Asp	Gln	Phe	Phe	Tyr	Leu	
			20					25					30			
Thr	Arg	Gln	Ala	Gly	Phe	Val	Val	Ala	Gly	Leu	Ile	Ala	Ser	Gly	Phe	
		35					40					45				
Leu	Trp	Phe	Leu	Cys	Arg	Met	Arg	Thr	Trp	Arg	Arg	Leu	Val	Pro	Trp	
	50					55					60					
Ile	Phe	Ala	Leu	Ser	Gly	Leu	Leu	Leu	Val	Ala	Val	Leu	Ile	Ala	Gly	
	65				70					75					80	
Arg	Glu	Ile	Asn	Gly	Ala	Thr	Arg	Trp	Ile	Pro	Leu	Gly	Pro	Leu	Asn	
				85					90					95		
Phe	Gln	Pro	Thr	Glu	Leu	Phe	Lys	Leu	Ala	Val	Ile	Leu	Tyr	Leu	Ala	
		100						105					110			
Ser	Leu	Phe	Thr	Arg	Arg	Glu	Glu	Val	Leu	Arg	Ser	Met	Glu	Ser	Leu	
		115					120					125				
Gly	Trp	Gln	Ser	Ile	Trp	Arg	Gly	Thr	Ala	Asn	Leu	Ile	Met	Ser	Ala	
	130					135					140					
Thr	Asn	Pro	Gln	Ala	Arg	Arg	Glu	Thr	Leu	Glu	Met	Tyr	Gly	Arg	Phe	
145					150					155					160	
Arg	Ala	Ile	Ile	Leu	Pro	Ile	Met	Leu	Val	Ala	Phe	Gly	Leu	Val	Leu	
				165					170					175		
Ile	Met	Val	Gln	Pro	Asp	Phe	Gly	Ser	Phe	Val	Val	Ile	Thr	Val	Ile	
		180						185					190			
Thr	Val	Gly	Met	Leu	Phe	Leu	Ala	Gly	Leu	Pro	Trp	Lys	Tyr	Phe	Phe	
	195						200					205				

Val Leu Val Gly Ser Val Leu Gly Gly Met Val Leu Met Ile Thr Ala  
 210 215 220  
 Ala Pro Tyr Arg Val Gln Arg Val Val Ala Phe Leu Asp Pro Trp Lys  
 225 230 235 240  
 Asp Pro Gln Gly Ala Gly Tyr Gln Leu Thr His Ser Leu Met Ala Ile  
 245 250 255  
 Gly Arg Gly Glu Trp Phe Gly Met Gly Leu Gly Ala Ser Leu Ser Lys  
 260 265 270  
 Arg Gly Phe Leu Pro Glu Ala His Thr Asp Phe Ile Phe Ala Ile Ile  
 275 280 285  
 Ala Glu Glu Phe Gly Phe Phe Gly Met Cys Val Leu Ile Phe Cys Tyr  
 290 295 300  
 Gly Trp Leu Val Val Arg Ala Phe Ser Ile Gly Lys Gln Ser Arg Asp  
 305 310 315 320  
 Leu Gly Leu Thr Phe Asn Ala Tyr Ile Ala Ser Gly Ile Gly Ile Trp  
 325 330 335  
 Ile Gly Ile Gln Ser Phe Phe Asn Ile Gly Val Asn Ile Gly Ala Leu  
 340 345 350  
 Pro Thr Lys Gly Leu Thr Leu Pro Leu Met Ser Tyr Gly Gly Ser Ser  
 355 360 365  
 Val Phe Phe Met Leu Ile Ser Met Met Leu Leu Leu Arg Ile Asp Tyr  
 370 375 380  
 Glu Asn Arg Gln Lys Met Arg Gly Tyr Arg Val Glu  
 385 390 395

<210> 273

<211> 1190

<212> DNA

<213> Neisseria meningitidis

<400> 273

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 gcatcaaaag aaggcggcga tcagtttttc tatttgacca gacaggcggg gttcgtcggt 120  
 gccggcttga tagcgagcgg tttgttatgg tttctttgca ggatgaggac atggcggcgg 180  
 cttgtgccgt ggatttttgc cctatccggc ctgttgctgg tagtcgtatt gattgccggg 240  
 cgcgaaatca atggcgcgac ccgttgata cctttgggtc cgttgaattt ccagccgacc 300  
 gagctgttca agctggcggg catcctttat ttggcaagcc tgttcacgcg ccgtgaagaa 360  
 gtgttgcgca gcatggaaaag tttgggttgg cagtcgattt ggcgggggac ggccaatctg 420  
 atcatgtccg ccaccaatcc gcagrcacgt cgtgaaacat tagaaatgta cggccgtwtc 480  
 cgggcgatca tctgtccgat tatgctgggt gcgttcgggt tgggtgctgat aatggtacag 540  
 ccggatttgc gttcgtttgt cgtcattacc gtcattgccg ttggaatgct gtttttggca 600  
 ggattgccgt ggaaatattt tttcgtcctg gtaggcagcg tcttgggcgg gatggtgctg 660  
 atgattaccg ccgctcccta ccgtgtgcag cgggtagtgg catttttga cccgtggaaa 720  
 gacccgcagg gtgccggcta ccagcttacc cactctctga tggcaatcgg gcgcggagag 780  
 tggttcggta tgggttttggg tgcgagtttg agcaaacgcg gctttctgcc ggaagcgcag 840

accgatttta tttttgccat catcgccgaa gaattcgggt tcttcgggtat gtgcgtgctg 900  
atattctggt acggctggct ggtggtgcgg gcgttttcca tcggcaagca gtcgcgcgat 960  
ttgggtttga ctttcaacgc ctatatcgct tcgggtatcg gcatttggat cggkrtccaa 1020  
agtttcttca atatcgggtg gaacatcggg gctttgccga mcaaaggycg gacgcygccg 1080  
tgatgtccwa tggcggttcg tcagtctttt tcatgctgat cagcatgatg ctgctgtkgc 1140  
gtatagatta tgaaaaccgc cggaaaatgc gcggttatcg ggtggagtaa 1190

<210> 274

<211> 396

<212> PRT

<213> Neisseria meningitidis

<400> 274

Met Val Val Leu Met Thr Ala Phe Ser Leu Leu Met Ile Tyr Ser Ala  
1 5 10 15

Ser Val Tyr Leu Ala Ser Lys Glu Gly Gly Asp Gln Phe Phe Tyr Leu  
20 25 30

Thr Arg Gln Ala Gly Phe Val Val Ala Gly Leu Ile Ala Ser Gly Leu  
35 40 45

Leu Trp Phe Leu Cys Arg Met Arg Thr Trp Arg Arg Leu Val Pro Trp  
50 55 60

Ile Phe Ala Leu Ser Gly Leu Leu Leu Val Val Val Leu Ile Ala Gly  
65 70 75 80

Arg Glu Ile Asn Gly Ala Thr Arg Trp Ile Pro Leu Gly Pro Leu Asn  
85 90 95

Phe Gln Pro Thr Glu Leu Phe Lys Leu Ala Val Ile Leu Tyr Leu Ala  
100 105 110

Ser Leu Phe Thr Arg Arg Glu Glu Val Leu Arg Ser Met Glu Ser Leu  
115 120 125

Gly Trp Gln Ser Ile Trp Arg Gly Thr Ala Asn Leu Ile Met Ser Ala  
130 135 140

Thr Asn Pro Gln Xaa Arg Arg Glu Thr Leu Glu Met Tyr Gly Arg Xaa  
145 150 155 160

Arg Ala Ile Ile Leu Pro Ile Met Leu Val Ala Phe Gly Leu Val Leu  
165 170 175

Ile Met Val Gln Pro Asp Phe Gly Ser Phe Val Val Ile Thr Val Ile  
180 185 190

Ala Val Gly Met Leu Phe Leu Ala Gly Leu Pro Trp Lys Tyr Phe Phe  
195 200 205

Val Leu Val Gly Ser Val Leu Gly Gly Met Val Leu Met Ile Thr Ala  
210 215 220

Ala Pro Tyr Arg Val Gln Arg Val Val Ala Phe Leu Asp Pro Trp Lys  
 225 230 235 240

Asp Pro Gln Gly Ala Gly Tyr Gln Leu Thr His Ser Leu Met Ala Ile  
 245 250 255

Gly Arg Gly Glu Trp Phe Gly Met Gly Leu Gly Ala Ser Leu Ser Lys  
 260 265 270

Arg Gly Phe Leu Pro Glu Ala His Thr Asp Phe Ile Phe Ala Ile Ile  
 275 280 285

Ala Glu Glu Phe Gly Phe Phe Gly Met Cys Val Leu Ile Phe Cys Tyr  
 290 295 300

Gly Trp Leu Val Val Arg Ala Phe Ser Ile Gly Lys Gln Ser Arg Asp  
 305 310 315 320

Leu Gly Leu Thr Phe Asn Ala Tyr Ile Ala Ser Gly Ile Gly Ile Trp  
 325 330 335

Ile Gly Xaa Gln Ser Phe Phe Asn Ile Gly Val Asn Ile Gly Ala Leu  
 340 345 350

Pro Xaa Lys Gly Leu Thr Xaa Pro Xaa Met Ser Xaa Gly Gly Ser Ser  
 355 360 365

Val Phe Phe Met Leu Ile Ser Met Met Leu Leu Xaa Arg Ile Asp Tyr  
 370 375 380

Glu Asn Arg Arg Lys Met Arg Gly Tyr Arg Val Glu  
 385 390 395

<210> 275

<211> 1191

<212> DNA

<213> Neisseria meningitidis

<400> 275

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 gccggcttga tagcgagcgg tttgttatgg tttctttgca ggatgaggac atggcggcgg 180  
 cttgtgccgt ggatttttgc cctatccggc ctggtgctgg tagtcgtatt gattgccggg 240  
 cgcgaaatca atggcgcgac ccgttggata ctttgggtc cgttgaattt ccagccgacc 300  
 gagctgttca agctggcggc catcctttat ttggcaagcc tgttcacgcg ccgtgaagaa 360  
 gtgttgcgca gcatggaaag tttgggttgg cagtcgattt ggcgggggac ggccaatctg 420  
 atcatgtccg ccaccaatcc gcaggcacgt cgtgaaacat tagaaatgta cggccgtttc 480  
 cgggcgatca tcttgccgat tatgctggtg gcgttcggtt tgggtgctgat aatggtacag 540  
 ccggatttgc gttcgtttgt cgtcattacc gtcattgccg ttggaatgct gtttttggca 600  
 ggattgccgt ggaaatattt tttcgtcctg gtaggcagcg tcttgggcgg gatggtgctg 660  
 atgattaccg ccgctcccta ccgtgtgcag cgggtagtgg catttttggg cccgtggaaa 720  
 gacccgcagg gtgccggcta ccagcttacc cactctctga tggcaatcgg gcgcggagag 780  
 tggttcggta tgggtttggg tgcgagtttg agcaaacgcg gctttctgcc ggaagcgcac 840  
 accgatttta tttttgcat catcgccgaa gaattcgggt tcttcgggtat gtgcgtgctg 900  
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agtttcttca atatcggtgt gaacatcggt gctttgccga ccaaaggtct gacgctgccg 1080  
 ttgatgtcct atggcggttc gtcagtcttt ttcagtctga tcagcatgat gctgctgttg 1140  
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<210> 276

<211> 396

<212> PRT

<213> Neisseria meningitidis

<400> 276

Met Val Val Leu Met Thr Ala Phe Ser Leu Leu Met Ile Tyr Ser Ala  
 1 5 10 15

Ser Val Tyr Leu Ala Ser Lys Glu Gly Gly Asp Gln Phe Phe Tyr Leu  
 20 25 30

Thr Arg Gln Ala Gly Phe Val Val Ala Gly Leu Ile Ala Ser Gly Leu  
 35 40 45

Leu Trp Phe Leu Cys Arg Met Arg Thr Trp Arg Arg Leu Val Pro Trp  
 50 55 60

Ile Phe Ala Leu Ser Gly Leu Leu Leu Val Val Val Leu Ile Ala Gly  
 65 70 75 80

Arg Glu Ile Asn Gly Ala Thr Arg Trp Ile Pro Leu Gly Pro Leu Asn  
 85 90 95

Phe Gln Pro Thr Glu Leu Phe Lys Leu Ala Val Ile Leu Tyr Leu Ala  
 100 105 110

Ser Leu Phe Thr Arg Arg Glu Glu Val Leu Arg Ser Met Glu Ser Leu  
 115 120 125

Gly Trp Gln Ser Ile Trp Arg Gly Thr Ala Asn Leu Ile Met Ser Ala  
 130 135 140

Thr Asn Pro Gln Ala Arg Arg Glu Thr Leu Glu Met Tyr Gly Arg Phe  
 145 150 155 160

Arg Ala Ile Ile Leu Pro Ile Met Leu Val Ala Phe Gly Leu Val Leu  
 165 170 175

Ile Met Val Gln Pro Asp Phe Gly Ser Phe Val Val Ile Thr Val Ile  
 180 185 190

Ala Val Gly Met Leu Phe Leu Ala Gly Leu Pro Trp Lys Tyr Phe Phe  
 195 200 205

Val Leu Val Gly Ser Val Leu Gly Gly Met Val Leu Met Ile Thr Ala  
 210 215 220

Ala Pro Tyr Arg Val Gln Arg Val Val Ala Phe Leu Asp Pro Trp Lys  
 225 230 235 240

Asp Pro Gln Gly Ala Gly Tyr Gln Leu Thr His Ser Leu Met Ala Ile

	245		250		255
Gly Arg Gly Glu Trp Phe Gly Met Gly Leu Gly Ala Ser Leu Ser Lys	260		265		270
Arg Gly Phe Leu Pro Glu Ala His Thr Asp Phe Ile Phe Ala Ile Ile	275		280		285
Ala Glu Glu Phe Gly Phe Phe Gly Met Cys Val Leu Ile Phe Cys Tyr	290		295		300
Gly Trp Leu Val Val Arg Ala Phe Ser Ile Gly Lys Gln Ser Arg Asp	305		310		315
Leu Gly Leu Thr Phe Asn Ala Tyr Ile Ala Ser Gly Ile Gly Ile Trp		325		330	335
Ile Gly Ile Gln Ser Phe Phe Asn Ile Gly Val Asn Ile Gly Ala Leu		340		345	350
Pro Thr Lys Gly Leu Thr Leu Pro Leu Met Ser Tyr Gly Gly Ser Ser		355		360	365
Val Phe Phe Met Leu Ile Ser Met Met Leu Leu Leu Arg Ile Asp Tyr		370		375	380
Glu Asn Arg Arg Lys Met Arg Gly Tyr Arg Val Glu		385		390	395

<210> 277

<211> 1069

<212> DNA

<213> Neisseria gonorrhoeae

<400> 277

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atgggcggta aaacctttat gctgatggcg ggcggaacgg gcgacacat tttcccagct 60
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gattcgatgg aagagcgcac cgtgccgcaa tacggcatac gcttggaac gctggcgatt 180
aaaggaatac gcggcaacgg catcaaacgc aagctgatgc ttccgtttac tctgtacaaa 240
accgtccgcg aagcgcagcg gattatccgc aaacaccgtg tcgagtgcgt catcggttc 300
ggcggttttg ttacctttcc cggcgggtctg gcggcgaaac tcttgggcgt gccgattgtg 360
attcacgagc aaaacgccgt ggcaggcttg tccaaccgcc acctgtcgcg ctgggcgaaa 420
cgggtgttgt acgcttttcc gaaagcgttc agccacgaag gcggtttggt cggcaacccc 480
gtccgcgccg atattagcaa cctgcccggtg cctgccgaac gcttccaagg gcgcgaaggc 540
cgtctgaaaa ttttggtggt cggcggcagt ttgggtgcgg acgttttgaa caaaaccgta 600
ccgcaggcgt tggcactgct gcctgaagag gtgcgccgcg agatgtacca ccagtcgggg 660
cgtaacaagc tgggcaatct tcaggcggat tatgacgcgt tgggcgtgaa agcggaatgc 720
gtggaattta ttaccgacat ggtgtccgcc taacctgatg ccgatttggg gatttgccgt 780
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tatcctcacg ccgttgatga ccatcaaacc gccaacgcgc gtttcatggt gcaggcagaa 900
gcggggctgc tgttgccgca aaccagttg acggcggaaa aactcgccga aatcctcggc 960
agcctcaacc gcgaaaaatg cctcaaattg gcggaaaacg cccgtacgtt ggcattgccg 1020
cacagcgcg atgacgttgc cgaagccgcg attgcgtgtg cggcgtaaa 1069

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<210> 278

<211> 355  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 278

Met Gly Gly Lys Thr Phe Met Leu Met Ala Gly Gly Thr Gly Gly His  
1 5 10 15  
Ile Phe Pro Ala Leu Ala Val Ala Asp Ser Leu Arg Val Arg Gly His  
20 25 30  
His Val Ile Trp Leu Gly Ser Lys Asp Ser Met Glu Glu Arg Ile Val  
35 40 45  
Pro Gln Tyr Gly Ile Arg Leu Glu Thr Leu Ala Ile Lys Gly Ile Arg  
50 55 60  
Gly Asn Gly Ile Lys Arg Lys Leu Met Leu Pro Phe Thr Leu Tyr Lys  
65 70 75 80  
Thr Val Arg Glu Ala Gln Arg Ile Ile Arg Lys His Arg Val Glu Cys  
85 90 95  
Val Ile Gly Phe Gly Gly Phe Val Thr Phe Pro Gly Gly Leu Ala Ala  
100 105 110  
Lys Leu Leu Gly Val Pro Ile Val Ile His Glu Gln Asn Ala Val Ala  
115 120 125  
Gly Leu Ser Asn Arg His Leu Ser Arg Trp Ala Lys Arg Val Leu Tyr  
130 135 140  
Ala Phe Pro Lys Ala Phe Ser His Glu Gly Gly Leu Val Gly Asn Pro  
145 150 155 160  
Val Arg Ala Asp Ile Ser Asn Leu Pro Val Pro Ala Glu Arg Phe Gln  
165 170 175  
Gly Arg Glu Gly Arg Leu Lys Ile Leu Val Val Gly Gly Ser Leu Gly  
180 185 190  
Ala Asp Val Leu Asn Lys Thr Val Pro Gln Ala Leu Ala Leu Leu Pro  
195 200 205  
Glu Glu Val Arg Pro Gln Met Tyr His Gln Ser Gly Arg Asn Lys Leu  
210 215 220  
Gly Asn Leu Gln Ala Asp Tyr Asp Ala Leu Gly Val Lys Ala Glu Cys  
225 230 235 240  
Val Glu Phe Ile Thr Asp Met Val Ser Ala Tyr Arg Asp Ala Asp Leu  
245 250 255  
Val Ile Cys Arg Ala Gly Ala Leu Thr Ile Ala Glu Leu Thr Ala Ala  
260 265 270  
Gly Leu Gly Ala Leu Leu Val Pro Tyr Pro His Ala Val Asp Asp His



275                      280                      285  
 Gln Thr Ala Asn Ala Arg Phe Met Val Gln Ala Glu Ala Gly Leu Leu  
       290                      295                      300  
 Leu Pro Gln Thr Gln Leu Thr Ala Glu Lys Leu Ala Glu Ile Leu Gly  
 305                      310                      315                      320  
 Ser Leu Asn Arg Glu Lys Cys Leu Lys Trp Ala Glu Asn Ala Arg Thr  
                     325                      330                      335  
 Leu Ala Leu Pro His Ser Ala Asp Asp Val Ala Glu Ala Ala Ile Ala  
                     340                      345                      350  
 Cys Ala Ala  
       355

<210> 279  
 <211> 1008  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 279  
 atgggcggtg aaacctttat gctgawkkcg ggcggaacgg gcggacatat tttccccgcg 60  
 ctggcggtgg cggattcatt gcgcgcgcgc ggccatcatg tgatttggct gggcagcaag 120  
 gattcgatgg aagagcgtat cgtgccgcaa tacggcatac gcttggaac gctggcgatt 180  
 aaaggcgtgc gcggcaacgg catcaaacgc aaactgatgc tgccggttac tttgtatcaa 240  
 accgtccgcg aagcgcagcg gattatccgc aaacaccgtg tcgagtgcgt catcggttc 300  
 ggcggttcg ttaccttccc cggcggtttg gcggcgaagc tattargcgt gccgattgtg 360  
 attcacgagc aaaacgcggt ggcaggtttg tccaaccgcc acctgtcgcg ctgggcgaag 420  
 cgggtgtgtg acgcttttcc gaaagcgttc agccacgaag gcggcttggc cggcaacccc 480  
 gtccgcgcgc atattagcaa cctgcccggt cctgccgaac gcttccaagg gcgtgaaggc 540  
 cgtctgaaaa ttttggtggt cggcggcagt ttgggcgcgg acgttttgaa caaaaccgta 600  
 ccgcatgcat tggctttgct gcccgacaat gcgcgtccgc atatgtacca ccaatcgga 660  
 cggggcaagc tgggcatctt gcaggcgnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 720  
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nngcgggat tgggtgcgtt gttagtgcg 780  
 taccctcacg cggttgacga tcaccaaacc gccaacgcgc gttttatggt gcaggcggag 840  
 gcgggattgc tggtgccgca aaccagttg acggcgga aactcgccga gattctcggc 900  
 ggcttaaac gcgaaaaatg cctcaaattg gcagaaaacg cccgtacgtt ggcactgccg 960  
 cacagtgcgg acgacgtggc ggaagccgcg attgcgtgtg cggcgtaa 1008

<210> 280  
 <211> 335  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 280  
 Met Gly Gly Lys Thr Phe Met Leu Xaa Xaa Gly Gly Thr Gly Gly His  
       1                      5                      10                      15  
 Ile Phe Pro Ala Leu Ala Val Ala Asp Ser Leu Arg Ala Arg Gly His  
                     20                      25                      30  
 His Val Ile Trp Leu Gly Ser Lys Asp Ser Met Glu Glu Arg Ile Val  
                     35                      40                      45

Pro Gln Tyr Gly Ile Arg Leu Glu Thr Leu Ala Ile Lys Gly Val Arg  
 50 55 60  
 Gly Asn Gly Ile Lys Arg Lys Leu Met Leu Pro Val Thr Leu Tyr Gln  
 65 70 75 80  
 Thr Val Arg Glu Ala Gln Arg Ile Ile Arg Lys His Arg Val Glu Cys  
 85 90 95  
 Val Ile Gly Phe Gly Gly Phe Val Thr Phe Pro Gly Gly Leu Ala Ala  
 100 105 110  
 Lys Leu Leu Xaa Val Pro Ile Val Ile His Glu Gln Asn Ala Val Ala  
 115 120 125  
 Gly Leu Ser Asn Arg His Leu Ser Arg Trp Ala Lys Arg Val Leu Tyr  
 130 135 140  
 Ala Phe Pro Lys Ala Phe Ser His Glu Gly Gly Leu Val Gly Asn Pro  
 145 150 155 160  
 Val Arg Ala Asp Ile Ser Asn Leu Pro Val Pro Ala Glu Arg Phe Gln  
 165 170 175  
 Gly Arg Glu Gly Arg Leu Lys Ile Leu Val Val Gly Gly Ser Leu Gly  
 180 185 190  
 Ala Asp Val Leu Asn Lys Thr Val Pro His Ala Leu Ala Leu Leu Pro  
 195 200 205  
 Asp Asn Ala Arg Pro His Met Tyr His Gln Ser Gly Arg Gly Lys Leu  
 210 215 220  
 Gly Ile Leu Gln Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 225 230 235 240  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Ala Gly Leu Gly Ala  
 245 250 255  
 Leu Leu Val Pro Tyr Pro His Ala Val Asp Asp His Gln Thr Ala Asn  
 260 265 270  
 Ala Arg Phe Met Val Gln Ala Glu Ala Gly Leu Leu Leu Pro Gln Thr  
 275 280 285  
 Gln Leu Thr Ala Glu Lys Leu Ala Glu Ile Leu Gly Gly Leu Asn Arg  
 290 295 300  
 Glu Lys Cys Leu Lys Trp Ala Glu Asn Ala Arg Thr Leu Ala Leu Pro  
 305 310 315 320  
 His Ser Ala Asp Asp Val Ala Glu Ala Ala Ile Ala Cys Ala Ala  
 325 330 335

<210> 281

<211> 1068  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 281  
 atgggcggtta aaacctttat gctgatggcg ggcggaacgg gcggacatat tttccccgcg 60  
 ctggcggttg cggattcatt gcgcgcgcgc ggccatcatg taatttggct gggcagcaag 120  
 gattcgatgg aagagcgcac cgtgccgcaa tacgacatcc tgctcgaaac gctggcgatt 180  
 aaaggcgtgc gcggcaacgg catcaaacgc aagctgatgc tgccgtttac tttgtatcaa 240  
 actgtccgcg aagcgagca gattatccgc aaacaccgtg tcgagtgcgt catcggcttc 300  
 ggcggttcg ttacctttcc cggcggtttg gcggcgaagt tattaggcgt gccgattgtg 360  
 attcacgagc aaaacgccgt ggcagggtttg tccaaccgcc acctgtcgcg ctgggcgaag 420  
 cgggtgttgt acgcttttcc gaaagcgttc agccacgaag gcggcttggc cggcaacccc 480  
 gtccgcgcgc atattagcaa cctgcccggtg cctgccgaac gtttccaagg gcgtgaaggc 540  
 cgtctgaaaa ttttggtggt cggcggcagt ttgggcgcgc acgttttgaa caaaaccgta 600  
 ccgcaggcat tggctttgct gcccagacaat gcgcgtccgc agatgtacca ccaatcggga 660  
  
 cggggcaagc tgggcagctt gcaggcggat tacgacgcgc tgggcgtgca agcgggaatgc 720  
 gtggaattta ttaccgatat ggtgtccgcc taccgcgatg ccgatttggc gatttgccgt 780  
 gccggcgcgc tgacgattgc cgagttgacg gcggcgggat tgggtgcgtt gttagtcccg 840  
 taccctcagc ccgttgatga ccatcaaacc gccaacgcgc gttttatggt gcaggcggag 900  
 gcgggattgc tgttgccgca aaccagttg acggcggaaa aactcgccga gattctcggc 960  
 ggcttaaac gcgaaaaatg cctcaaattg gcagaaaacg cccgtacgtt ggcactgccg 1020  
 cacagtgcgc acgacgttgc cgaagccgcg attgcgtgtg cggcgtaa 1068

<210> 282  
 <211> 355  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 282  
 Met Gly Gly Lys Thr Phe Met Leu Met Ala Gly Gly Thr Gly Gly His  
 1 5 10 15  
  
 Ile Phe Pro Ala Leu Ala Val Ala Asp Ser Leu Arg Ala Arg Gly His  
 20 25 30  
  
 His Val Ile Trp Leu Gly Ser Lys Asp Ser Met Glu Glu Arg Ile Val  
 35 40 45  
  
 Pro Gln Tyr Asp Ile Leu Leu Glu Thr Leu Ala Ile Lys Gly Val Arg  
 50 55 60  
  
 Gly Asn Gly Ile Lys Arg Lys Leu Met Leu Pro Phe Thr Leu Tyr Gln  
 65 70 75 80  
  
 Thr Val Arg Glu Ala Gln Gln Ile Ile Arg Lys His Arg Val Glu Cys  
 85 90 95  
  
 Val Ile Gly Phe Gly Gly Phe Val Thr Phe Pro Gly Gly Leu Ala Ala  
 100 105 110  
  
 Lys Leu Leu Gly Val Pro Ile Val Ile His Glu Gln Asn Ala Val Ala  
 115 120 125  
  
 Gly Leu Ser Asn Arg His Leu Ser Arg Trp Ala Lys Arg Val Leu Tyr

130		135		140
Ala Phe Pro Lys Ala Phe Ser His Glu Gly Gly Leu Val Gly Asn Pro				
145		150		155
Val Arg Ala Asp Ile Ser Asn Leu Pro Val Pro Ala Glu Arg Phe Gln				
	165		170	175
Gly Arg Glu Gly Arg Leu Lys Ile Leu Val Val Gly Gly Ser Leu Gly				
	180		185	190
Ala Asp Val Leu Asn Lys Thr Val Pro Gln Ala Leu Ala Leu Leu Pro				
	195		200	205
Asp Asn Ala Arg Pro Gln Met Tyr His Gln Ser Gly Arg Gly Lys Leu				
	210		215	220
Gly Ser Leu Gln Ala Asp Tyr Asp Ala Leu Gly Val Gln Ala Glu Cys				
	225		230	235
Val Glu Phe Ile Thr Asp Met Val Ser Ala Tyr Arg Asp Ala Asp Leu				
	245		250	255
Val Ile Cys Arg Ala Gly Ala Leu Thr Ile Ala Glu Leu Thr Ala Ala				
	260		265	270
Gly Leu Gly Ala Leu Leu Val Pro Tyr Pro His Ala Val Asp Asp His				
	275		280	285
Gln Thr Ala Asn Ala Arg Phe Met Val Gln Ala Glu Ala Gly Leu Leu				
	290		295	300
Leu Pro Gln Thr Gln Leu Thr Ala Glu Lys Leu Ala Glu Ile Leu Gly				
	305		310	315
Gly Leu Asn Arg Glu Lys Cys Leu Lys Trp Ala Glu Asn Ala Arg Thr				
	325		330	335
Leu Ala Leu Pro His Ser Ala Asp Asp Val Ala Glu Ala Ala Ile Ala				
	340		345	350
Cys Ala Ala				
	355			

<210> 283

<211> 1131

<212> DNA

<213> Neisseria gonorrhoeae

<400> 283

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atgttttttat ggctcgacaca tttcagcaac tggttaaccg gtctgaatat ttttcaatac 60
accacattcc ggcgcgttat ggcggcggtt accgccttgg cgttttccct gatgttcggc 120
ccgtggacga tacgcaggct gaccgcgctc aaatgcgggc aggcagtgcg taccgacggc 180
ccgcaaacc acctcgtaa aaacggcacg ccgacgatgg gcggttcgct gattctgacc 240
gccattaccg tgtccaccct gttgtggggc aactgggcga acccgatat ctggattctc 300
ttgggcgtac tgcttgccac cggtcgcctc ggtttttacg acgactggcg caaagtcgtt 360

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tataaagacc ccaacggcgt gtccgcaaaa ttcaaaatgg tgtggcagtc aagcgttgcc 420
ggtatcgccg gtttggcatt gttttacctt gccgccaatt ccgccaacaa tattttgatt 480
gtcccgtttt tcaaacaaat cgccttgccg ctgggcgtgg tcggcttttt ggtgttgtct 540
tacctgacca tcgtcggcac atccaacgcc gtcaacctca ccgacggctt ggacggcctt 600
gccgccttcc cgttcgtcct cgttgccgcc gggctcgcca ttttcgccta cgtcagcgga 660
cactaccaat tttcccaata cctccagctt ccctatgtcg ccggcgcgaa cgaagtcgct 720
atattctgca ccgccatgtg cggcgcgctg ctcggaattt tgtggttcaa cgcctatccc 780
gcgcaagtct ttatgggcga tgtcggcgcg ctggcattgg gtgccgcgct cggtagcggt 840
gccgtcatcg tccgccaaga atttgcctc gtcattatgg gcggtctgtt cgtcgtagaa 900
gccgtgtccg ttatgcttca tgtcggctgg tacaagaaaa ccaaaaaacg catcttctg 960
acggcaccga ttcataacca ttaccaactt cgatgctgga aagaaacgca agtcgtcgtc 1020
cgtttctgga ttattacat cgtcgtgggt ttgatagggt tgagtaccct caaaattcgc 1080
ggaaactatg ccgtccgaac acctttcaga cggcatttga acgcgcaata a 1131

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<210> 284

<211> 376

<212> PRT

<213> Neisseria gonorrhoeae

<400> 284

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Met Phe Leu Trp Leu Ala His Phe Ser Asn Trp Leu Thr Gly Leu Asn
  1              5              10              15

Ile Phe Gln Tyr Thr Thr Phe Arg Ala Val Met Ala Ala Leu Thr Ala
      20              25              30

Leu Ala Phe Ser Leu Met Phe Gly Pro Trp Thr Ile Arg Arg Leu Thr
      35              40              45

Ala Leu Lys Cys Gly Gln Ala Val Arg Thr Asp Gly Pro Gln Thr His
      50              55              60

Leu Val Lys Asn Gly Thr Pro Thr Met Gly Gly Ser Leu Ile Leu Thr
      65              70              75              80

Ala Ile Thr Val Ser Thr Leu Leu Trp Gly Asn Trp Ala Asn Pro Tyr
      85              90              95

Ile Trp Ile Leu Leu Gly Val Leu Leu Ala Thr Gly Ala Leu Gly Phe
      100             105             110

Tyr Asp Asp Trp Arg Lys Val Val Tyr Lys Asp Pro Asn Gly Val Ser
      115             120             125

Ala Lys Phe Lys Met Val Trp Gln Ser Ser Val Ala Val Ile Ala Gly
      130             135             140

Leu Ala Leu Phe Tyr Leu Ala Ala Asn Ser Ala Asn Asn Ile Leu Ile
      145             150             155             160

Val Pro Phe Phe Lys Gln Ile Ala Leu Pro Leu Gly Val Val Gly Phe
      165             170             175

Leu Val Leu Ser Tyr Leu Thr Ile Val Gly Thr Ser Asn Ala Val Asn
      180             185             190

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Leu Thr Asp Gly Leu Asp Gly Leu Ala Ala Phe Pro Phe Val Leu Val  
 195 200 205  
 Ala Ala Gly Leu Ala Ile Phe Ala Tyr Val Ser Gly His Tyr Gln Phe  
 210 215 220  
 Ser Gln Tyr Leu Gln Leu Pro Tyr Val Ala Gly Ala Asn Glu Val Ala  
 225 230 235 240  
 Ile Phe Cys Thr Ala Met Cys Gly Ala Cys Leu Gly Phe Leu Trp Phe  
 245 250 255  
 Asn Ala Tyr Pro Ala Gln Val Phe Met Gly Asp Val Gly Ala Leu Ala  
 260 265 270  
 Leu Gly Ala Ala Leu Gly Thr Val Ala Val Ile Val Arg Gln Glu Phe  
 275 280 285  
 Val Leu Val Ile Met Gly Gly Leu Phe Val Val Glu Ala Val Ser Val  
 290 295 300  
 Met Leu His Val Gly Trp Tyr Lys Lys Thr Lys Lys Arg Ile Phe Leu  
 305 310 315 320  
 Thr Ala Pro Ile His His His Tyr Gln Leu Arg Cys Trp Lys Glu Thr  
 325 330 335  
 Gln Val Val Val Arg Phe Trp Ile Ile Thr Ile Val Val Val Leu Ile  
 340 345 350  
 Gly Leu Ser Thr Leu Lys Ile Arg Gly Asn Tyr Ala Val Arg Thr Pro  
 355 360 365  
 Phe Arg Arg His Leu Asn Ala Gln  
 370 375

<210> 285

<211> 1131

<212> DNA

<213> Neisseria meningitidis

<400> 285

atgtttttat ggctcgacaca tttcagcanc tggttaaccg gtctgaatnn nnnnnnnnnn 60  
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 120  
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 180  
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 240  
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 300  
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 360  
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 420  
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 480  
 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnggcgtgg tcggcttttt ggtgttgtct 540  
 tacctgacca tcgtcggcac atccaatgcc gtcaacctca ccgacggcctt ggacggcctt 600  
 gcgaccttc ccgtcgtcct cgttgccgcc gccctcgcca tcttcgccta tgccagcgcc 660  
 cactcacaat ttgcccaata cctgcaatta ccttacgttg ccggcgcaaa cgaagtgggtg 720  
 attttctgta ccgccatgtg cggcgcggtgc ctcgggtttct tgtggtttta cgcctatccc 780  
 gcgcaagtct ttatgggcga tgtcgggtgca ttggcattgg gtgccgcgct cggtagcgtc 840

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gccgttatcg tccgccaaga gtttgcctc gtcattatgg gccgattatt tgcgtagaa 900
gccgtatccg ttatgcttca gggtggctgg tataagaaaa ccaaaaaacg catcttcctg 960
atggcgccca tccatcacca ctacgaacaa aaaggctgga aagaaacca agtcgtcgtc 1020
cgcttttgga ttattaccat cgtcttggtg ttgatcgggt tgagtaccct caaatccgc 1080
tgaacctatg ccgtctgaac atctttcaga cggcatttga acgcgcaata a 1131

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<210> 286

<211> 376

<212> PRT

<213> Neisseria meningitidis

<400> 286

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Met Phe Leu Trp Leu Ala His Phe Ser Asn Trp Leu Thr Gly Leu Asn
  1             5             10             15

Ile Phe Gln Tyr Thr Thr Phe Arg Ala Val Met Ala Ala Leu Thr Ala
      20             25             30

Leu Ala Phe Ser Leu Met Phe Gly Pro Trp Thr Ile Arg Arg Leu Thr
      35             40             45

Ala Leu Lys Cys Gly Gln Ala Val Arg Thr Asp Gly Pro Gln Thr His
      50             55             60

Leu Val Lys Asn Gly Thr Pro Thr Met Gly Gly Ser Leu Ile Leu Thr
      65             70             75             80

Ala Ile Thr Val Ser Thr Leu Leu Trp Gly Asn Trp Ala Asn Pro Tyr
      85             90             95

Ile Trp Ile Leu Leu Gly Val Leu Leu Ala Thr Gly Ala Leu Gly Phe
      100            105            110

Tyr Asp Asp Trp Arg Lys Val Val Tyr Lys Asp Pro Asn Gly Val Ser
      115            120            125

Ala Lys Phe Lys Met Val Trp Gln Ser Ser Val Ala Val Ile Ala Gly
      130            135            140

Leu Ala Leu Phe Tyr Leu Ala Ala Asn Ser Ala Asn Asn Ile Leu Ile
      145            150            155            160

Val Pro Phe Phe Lys Gln Ile Ala Leu Pro Leu Gly Val Val Gly Phe
      165            170            175

Leu Val Leu Ser Tyr Leu Thr Ile Val Gly Thr Ser Asn Ala Val Asn
      180            185            190

Leu Thr Asp Gly Leu Asp Gly Leu Ala Thr Phe Pro Val Val Leu Val
      195            200            205

Ala Ala Gly Leu Ala Ile Phe Ala Tyr Ala Ser Gly His Ser Gln Phe
      210            215            220

Ala Gln Tyr Leu Gln Leu Pro Tyr Val Ala Gly Ala Asn Glu Val Val
      225            230            235            240

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<211> 374  
<212> PRT  
<213> Neisseria meningitidis

<400> 288

Met Phe Leu Trp Leu Ala His Phe Ser Asn Trp Leu Thr Gly Leu Asn  
1 5 10 15  
Ile Phe Gln Tyr Thr Thr Phe Arg Ala Val Met Ala Ala Leu Thr Ala  
20 25 30  
Leu Ala Phe Ser Leu Met Phe Gly Pro Trp Thr Ile Arg Arg Leu Thr  
35 40 45  
Ala Leu Lys Cys Gly Gln Ala Val Arg Thr Asp Gly Pro Gln Thr His  
50 55 60  
Leu Val Lys Asn Gly Thr Pro Thr Met Gly Gly Ser Leu Ile Leu Thr  
65 70 75 80  
Ala Ile Thr Val Ser Thr Leu Leu Trp Gly Asn Trp Ala Asn Pro Tyr  
85 90 95  
Ile Trp Ile Leu Leu Gly Val Leu Leu Ala Thr Gly Ala Leu Gly Phe  
100 105 110  
Tyr Asp Asp Trp Arg Lys Val Val Tyr Lys Asp Pro Asn Gly Val Ser  
115 120 125  
Ala Lys Phe Lys Met Val Trp Gln Ser Ser Val Ala Ile Ile Ala Gly  
130 135 140  
Leu Ala Leu Phe Tyr Leu Ala Ala Asn Ser Ala Asn Asn Ile Leu Ile  
145 150 155 160  
Val Pro Phe Phe Lys Gln Ile Ala Leu Pro Leu Gly Val Val Gly Phe  
165 170 175  
Leu Val Leu Ser Tyr Leu Thr Ile Val Gly Thr Ser Asn Ala Val Asn  
180 185 190  
Leu Thr Asp Gly Leu Asp Gly Leu Ala Thr Phe Pro Val Val Leu Val  
195 200 205  
Ala Ala Gly Leu Ala Ile Phe Ala Tyr Ala Ser Gly His Ser Gln Phe  
210 215 220  
Ala Gln Tyr Leu Gln Leu Pro Tyr Val Ala Gly Ala Asn Glu Val Val  
225 230 235 240  
Ile Phe Cys Thr Ala Met Cys Gly Ala Cys Leu Gly Phe Leu Trp Phe  
245 250 255  
Asn Ala Tyr Pro Ala Gln Val Phe Met Gly Asp Val Gly Ala Leu Ala  
260 265 270  
Leu Gly Ala Ala Leu Gly Thr Val Ala Val Ile Val Arg Gln Glu Phe

275                      280                      285  
 Val Leu Val Ile Met Gly Gly Leu Phe Val Val Glu Ala Val Ser Val  
 290                      295                      300  
 Met Leu Gln Val Gly Trp Tyr Lys Lys Thr Lys Lys Arg Ile Phe Leu  
 305                      310                      315                      320  
 Met Ala Pro Ile His His His Tyr Glu Gln Lys Gly Trp Lys Glu Thr  
 325                      330                      335  
 Gln Val Val Val Arg Phe Trp Ile Ile Thr Ile Val Leu Val Leu Ile  
 340                      345                      350  
 Gly Leu Ser Thr Leu Lys Ile Arg Thr Tyr Ala Val Thr Pro Phe Arg  
 355                      360                      365  
 Arg His Leu Asn Ala Gln  
 370

<210> 289  
 <211> 450  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 289  
 atgccgcccc aaatcacgaa gagcgggttt tgcaaaccgg caatcgcggc ggcggtcgcg 60  
 ccgacattcg tgcctttgct gtcgtcgatg aataccacgc cgtttttctc gccgattttt 120  
 tccacacggt gcggcaagcc ttggaaggtt ttgacgtgtt ccagcaatgc ttgcgcgggc 180  
 aaaccgacgg cctcgacaaa agccacggca gccataacgt tggcggcggt gtgcaaacct 240  
 tgcagcggga tgtcttgcgt agaaatcaaa tcttcattgc cttgttttaa acagcccgtc 300  
 ccgcgttcca accaaaaatc ggcttcgtgt tccaaggaaa accgtttcac ttcacgccct 360  
 gcccgtttca tggcgcggca gaacacgtcg tccgcattca aaacctgcac tccatcgcca 420  
 cggaaaaatct cggctttggt atgcgcgtag 450

<210> 290  
 <211> 149  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 290  
 Met Pro Pro Lys Ile Thr Lys Ser Gly Phe Cys Lys Pro Ala Ile Ala  
 1                      5                      10                      15  
 Ala Ala Val Ala Pro Thr Phe Val Pro Leu Leu Ser Ser Met Asn Thr  
 20                      25                      30  
 Thr Pro Phe Phe Ser Pro Ile Phe Ser Thr Arg Cys Gly Lys Pro Trp  
 35                      40                      45  
 Lys Val Leu Thr Cys Ser Ser Asn Ala Ser Arg Gly Lys Pro Thr Ala  
 50                      55                      60  
 Ser His Lys Ala Thr Ala Ala Ile Thr Leu Ala Ala Leu Cys Lys Pro  
 65                      70                      75                      80

Cys Ser Gly Met Ser Cys Val Glu Ile Lys Ser Ser Leu Pro Cys Phe  
85 90 95

Lys Gln Pro Val Pro Arg Ser Asn Gln Lys Ser Ala Ser Cys Ser Lys  
100 105 110

Glu Asn Arg Phe Thr Ser Arg Pro Ala Arg Phe Met Ala Arg Gln Asn  
115 120 125

Thr Ser Ser Ala Phe Lys Thr Cys Thr Pro Ser Pro Arg Lys Ile Ser  
130 135 140

Ala Leu Val Cys Ala  
145

<210> 291

<211> 450

<212> DNA

<213> Neisseria meningitidis

<400> 291

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ccgacattcg tgcctttgct gtcgtcgata aacaccacgc cgtttttctc gccgattttt 120  
tccacgcggt gcggcaggcc ttggaagggt ttgacgtggt cgagcaatgc ttcgcgcgac 180  
aaaccgatgg cctcacacaa agccackgca gccatgacgt tagcggcggt gtgcakacct 240  
tgcaacggwa tgtcttgctg gacaatcaaa ttttcattgc cttgtttcag gcggcctgtc 300  
tcgcgttcca accagaaatc agcttcgtgt tccaacgaaa accattttac ctcgcgcccc 360  
gcacgcttca tcgcgcggca gaacgcatcg tccgcattca aaacctgcac gccgtcgcca 420  
cggaaaatct tggctttggt atgcgcatag 450

<210> 292

<211> 149

<212> PRT

<213> Neisseria meningitidis

<400> 292

Met Pro Pro Lys Ile Thr Xaa Ser Gly Phe Cys Lys Pro Ala Ile Ala  
1 5 10 15

Ala Ala Val Ala Pro Thr Phe Val Pro Leu Leu Ser Ser Ile Asn Thr  
20 25 30

Thr Pro Phe Phe Ser Pro Ile Phe Ser Thr Arg Cys Gly Arg Pro Trp  
35 40 45

Lys Val Leu Thr Cys Ser Ser Asn Ala Ser Arg Asp Lys Pro Met Ala  
50 55 60

Ser His Lys Ala Thr Ala Ala Met Thr Leu Ala Ala Leu Cys Xaa Pro  
65 70 75 80

Cys Asn Gly Met Ser Cys Val Thr Ile Lys Ser Ser Leu Pro Cys Phe  
85 90 95

Arg Arg Pro Val Ser Arg Ser Asn Gln Lys Ser Ala Ser Cys Ser Asn  
100 105 110

Glu Asn His Phe Thr Ser Arg Pro Ala Arg Phe Ile Ala Arg Gln Asn  
115 120 125

Ala Ser Ser Ala Phe Lys Thr Cys Thr Pro Ser Pro Arg Lys Ile Leu  
130 135 140

Ala Leu Val Cys Ala  
145

<210> 293  
<211> 450  
<212> DNA  
<213> Neisseria meningitidis

<400> 293  
atgccgccta aaatcacgaa gagcggattt tgcaaacggg caatcgcggc ggcggtcgca 60  
ccgacgttcg tgcctttgct gtcgtcgatg aacaccacgc catTTTTtctc gccgattttt 120  
tccacgcggt gcggcaggcc ttgaaagggt ttgacgtgtt cgagcaatgc ttcgcgcggc 180  
aaaccgacgg cttcgacaaa ggcaacggca gccatcacgt tagtggcggt gtgcaagcct 240  
tgcagcggaa tatcttgctg ggcaatcaaa tcttcattgc cttgtttcag gcgacctgtc 300  
tcacgttcca accaaaaatc ggcttcgtat tccaacgaaa accatttcac ctgcgcgccg 360  
gcgcgcttca tcgcacgaca gaacgcattc tccgcattca aaacctgcac accgtcgcca 420  
cggaaaaatct tggctttggt atgcgcgtag 450

<210> 294  
<211> 148  
<212> PRT  
<213> Neisseria meningitidis

<400> 294  
Met Pro Pro Lys Ile Thr Lys Ser Gly Phe Cys Lys Pro Ala Ile Ala  
1 5 10 15  
Ala Ala Val Ala Pro Thr Phe Val Pro Leu Leu Ser Ser Met Asn Thr  
20 25 30  
Thr Pro Phe Phe Ser Pro Ile Phe Ser Thr Arg Cys Gly Arg Pro Lys  
35 40 45  
Val Leu Thr Cys Ser Ser Asn Ala Ser Arg Gly Lys Pro Thr Ala Ser  
50 55 60  
His Lys Ala Thr Ala Ala Ile Thr Leu Val Ala Leu Cys Lys Pro Cys  
65 70 75 80  
Ser Gly Ile Ser Cys Val Ala Ile Lys Ser Ser Leu Pro Cys Phe Arg  
85 90 95  
Arg Pro Val Ser Arg Ser Asn Gln Lys Ser Ala Ser Tyr Ser Asn Glu  
100 105 110  
Asn His Phe Thr Ser Arg Pro Ala Arg Phe Ile Ala Arg Gln Asn Ala

115 120 125  
 Ser Ser Ala Phe Lys Thr Cys Thr Pro Ser Pro Arg Lys Ile Leu Ala  
 130 135 140

Leu Val Cys Ala  
 145

<210> 295  
 <211> 356  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 295  
 atgcgcgtag tcgagcaaat cgtcgtagcg gtcgagatgg tcttcggaaa tgttcacac 60  
 cgtcgccgca gtcggcgca ggctttcggg gttttccagt tggaagctgg aaagctcca 120  
 caccacacg tccgcctttt tgccttcgcg ctgcaattct gcctccaaga cgggcgtacc 180  
 gatattgcc gcaatgacgg tatccagccc gcacttgatg cagagatagc ggaccaggct 240  
 ggttaccgtg gttttgccgt tgcgtccggg aatcgcaatc accttgctgc cgcggcgggt 300  
 cacaatgtcc gccagcaatt ggatgtcgcc tagcacgcgc ccgccgtttt gcttga 356

<210> 296  
 <211> 118  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 296  
 Met Arg Val Val Glu Gln Ile Val Val Ala Val Glu Met Val Phe Gly  
 1 5 10 15  
 Asn Val His His Arg Arg Arg Ser Arg Ala Gln Ala Phe Gly Val Phe  
 20 25 30  
 Gln Leu Glu Ala Gly Lys Leu Pro His Pro His Val Arg Leu Phe Ala  
 35 40 45  
 Phe Ala Leu Gln Phe Cys Leu Gln Asp Gly Arg Thr Asp Ile Ala Arg  
 50 55 60  
 Asn Asp Gly Ile Gln Pro Ala Leu Asp Ala Glu Ile Ala Asp Gln Ala  
 65 70 75 80  
 Gly Tyr Arg Gly Phe Ala Val Ala Ala Gly Asn Arg Asn His Leu Val  
 85 90 95  
 Ala Ala Ala Val His Asn Val Arg Gln Gln Leu Asp Val Ala Xaa His  
 100 105 110  
 Ala Xaa Arg Arg Phe Ala  
 115

<210> 297  
 <211> 356  
 <212> DNA

<213> Neisseria meningitidis

<400> 297

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atgcgcatag tgcagcaagt cgtcgttagcg gtcgagatgg tcttcggaaa tgttcagcac 60
cgtcgccgca gtcggacgca ggcttttcggt gttttccagt tggaagctgg aaagctccaa 120
caccacacag tccgcctttt tgccttcgcg ctgccattcc gcctccaaaa ccggcggtgcc 180
gatattgccc gcgataacgg tatccagccc gcacttgata cagagatagc cgaccaggct 240
cgttaccgtg gttttgccgt tgctgccggt aatcgcaatt accttgtcgt cccggcggtt 300
cacaatgtcc gccagcaatt cgatgtcgcc caacacgcgt ccgccgtttt gcttga 356
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<210> 298

<211> 118

<212> PRT

<213> Neisseria meningitidis

<400> 298

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Met Arg Ile Val Glu Gln Val Val Val Ala Val Glu Met Val Phe Gly
  1             5             10             15

Asn Val Gln His Arg Arg Arg Ser Arg Thr Gln Ala Phe Gly Val Phe
          20             25             30

Gln Leu Glu Ala Gly Lys Leu Gln His Pro His Val Arg Leu Phe Ala
  35             40             45

Phe Ala Leu Pro Phe Arg Leu Gln Asn Arg Arg Ala Asp Ile Ala Arg
  50             55             60

Asp Asn Gly Ile Gln Pro Ala Leu Asp Thr Glu Ile Ala Asp Gln Ala
  65             70             75             80

Arg Tyr Arg Gly Phe Ala Val Ala Ala Gly Asn Arg Asn Tyr Leu Val
          85             90             95

Val Pro Ala Val His Asn Val Arg Gln Gln Phe Asp Val Ala Gln His
  100            105            110

Ala Xaa Arg Arg Phe Ala
  115
```

<210> 299

<211> 356

<212> DNA

<213> Neisseria meningitidis

<400> 299

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atgcgcgtag tgcagcaagt cgtcgttagcg gtcgagatgg tcttcggaaa tgttcagcac 60
tgtcgccgca gtcgggacgca ggcttttcggt gttttccagt tggaaactgg aaagctccaa 120
caccacacag tccgcctttt tgccttcgcg ctgcaattcc gcctccaaaa ccggcgcgcc 180
gatattgccc gcgataacgg tatccagccc acacttgatg cagagatagc cgaccaggct 240
cgttaccgtg gttttgccgt tgctgccggt aatcgcaatc accttgtcgc cgcggcggtt 300
cacaatgtcc gccagcaatt cgatgtcgcc caacacgcgt ccgccgtttc gcttaa 356
```

<210> 300

<211> 118  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 300

Met	Arg	Val	Val	Glu	Gln	Val	Val	Val	Ala	Val	Glu	Met	Val	Phe	Gly
1				5					10					15	
Asn	Val	Gln	His	Cys	Arg	Arg	Ser	Arg	Ala	Gln	Ala	Phe	Gly	Val	Phe
			20					25					30		
Gln	Leu	Glu	Thr	Gly	Lys	Leu	Gln	His	Pro	His	Val	Arg	Leu	Phe	Ala
		35					40					45			
Phe	Ala	Leu	Gln	Phe	Arg	Leu	Gln	Asn	Arg	Arg	Ala	Asp	Ile	Ala	Arg
	50					55					60				
Asp	Asn	Gly	Ile	Gln	Pro	Thr	Leu	Asp	Ala	Glu	Ile	Ala	Asp	Gln	Ala
65					70					75				80	
Arg	Tyr	Arg	Gly	Phe	Ala	Val	Ala	Ala	Gly	Asn	Arg	Asn	His	Leu	Val
			85						90					95	
Ala	Ala	Ala	Val	His	Asn	Val	Arg	Gln	Gln	Phe	Asp	Val	Ala	Gln	His
			100					105					110		
Ala	Xaa	Arg	Arg	Phe	Ala										
			115												

<210> 301  
 <211> 1380  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 301

atgacggcgt	ttgcatttca	gacggcatca	caaagcctta	aacgcttcga	taaacacttc	60
cgaacgggtg	gcgtagcctt	tgaacatatc	aaagctcgcg	caggcggggc	tgagcaaacac	120
aatatgcgct	gcttcgggct	gggcatatgc	cgtctgaacg	gcttctccca	aagtggcgca	180
gtcggtcata	ttcaagccgc	agccgtccaa	atcgcgggcg	atttgcggcg	catcgacacc	240
aatcaagaac	acgccttttg	ccttgccctac	cagtgcateg	cgcagggggc	tgaagtcctg	300
ccctttaccc	atgcgcgcca	aaatcacgaa	gagcggattt	tgcaaaccgg	caatcgcggc	360
ggcagtcgcg	ccgacattcg	tgcctttgct	gtcgtcgata	aacaccacgc	cgtttttctc	420
gccgattttt	tccacgcggg	gcggcaggcc	ttggaagggt	ttgacgtggt	cgagcaatgc	480
ttcgcgcgac	aaaccgatgg	cctcacacaa	agccacggca	gccatgacgt	tagcggcggt	540
gtgcagacct	tgcaacggaa	tgtcttgctg	gacaatcaaa	tcttcattgc	cttgtttcag	600
gcggcctgtc	tcgcgttcca	accagaaatc	agcttcgtgt	tccaacgaaa	accattttac	660
ctcgcgcccg	gcacgcttca	tcgcgcggca	gaacgcateg	tccgcattca	aaacctgcac	720
gccgtcgcca	cggaaaatct	tggctttggt	atgcgcatag	tcgagcaagt	cgtcgtagcg	780
gtcgagatgg	tcttcggaaa	tgttcagcac	cgtcgccgca	gtcggacgca	ggctttcggt	840
gttttccagt	tggaagctgg	aaagctccaa	cacccacacg	tccgcctttt	tgcttcgcgc	900
ctgccattcc	gcctccaaaa	ccggcgtgcc	gatattgccc	gcgataacgg	tatccagccc	960
gcacttgata	cagagatagc	cgaccaggct	cgttaccgtg	gttttgccgt	tgctgcccgt	1020
aatcgcaatt	acctgtgcgt	cccggcggtt	cacaatgtcc	gccagcaatt	cgatgtcgcc	1080
caacacgcgt	ccgcggtttt	gcttgaacgc	ctcaatatcc	ggctgcccgt	cgctgatgcc	1140
gggactgaga	gccagaatat	cgaaaccggt	gtccagcgca	tctttcagac	ggcccgtgta	1200
aaacaccaac	ccgtcaaaca	tcttaccgat	ttgcgacacg	cgttccggct	tcagctccgc	1260

atcatacgca gcaacctccg cgccgttttt gcgcaggtag gcaatcatgg aaataccggt 1320  
 accgccgagt ccggcgacga ggattttttt gttttgaaaa gtcattttgg tttgtcctaa 1380

<210> 302

<211> 459

<212> PRT

<213> Neisseria meningitidis

<400> 302

Met Thr Ala Phe Ala Phe Gln Thr Ala Ser Gln Ser Leu Lys Arg Phe  
 1 5 10 15

Asp Lys His Phe Arg Thr Val Arg Val Ala Phe Glu His Ile Lys Ala  
 20 25 30

Arg Ala Gly Gly Ala Glu Gln His Asn Ile Ala Cys Phe Gly Leu Gly  
 35 40 45

Ile Cys Arg Leu Asn Gly Phe Ser Gln Ser Gly Ala Val Gly His Ile  
 50 55 60

Gln Ala Ala Ala Val Gln Ile Ala Ala Asp Leu Arg Arg Ile Asp Thr  
 65 70 75 80

Asn Gln Glu His Ala Phe Cys Leu Ala Tyr Gln Cys Ile Ala Gln Gly  
 85 90 95

Arg Glu Val Leu Pro Phe Thr His Ala Ala Gln Asn His Glu Glu Arg  
 100 105 110

Ile Leu Gln Thr Gly Asn Arg Gly Gly Ser Arg Ala Asp Ile Arg Ala  
 115 120 125

Phe Ala Val Val Asp Lys His His Ala Val Phe Leu Ala Asp Phe Phe  
 130 135 140

His Ala Val Arg Gln Ala Leu Glu Gly Phe Asp Val Phe Glu Gln Cys  
 145 150 155 160

Phe Ala Arg Gln Thr Asp Gly Leu Thr Gln Ser His Gly Ser His Asp  
 165 170 175

Val Ser Gly Val Val Gln Thr Leu Gln Arg Asn Val Leu Arg Asp Asn  
 180 185 190

Gln Ile Phe Ile Ala Leu Phe Gln Ala Ala Cys Leu Ala Phe Gln Pro  
 195 200 205

Glu Ile Ser Phe Val Phe Gln Arg Lys Pro Phe Tyr Leu Ala Pro Gly  
 210 215 220

Thr Leu His Arg Ala Ala Glu Arg Ile Val Arg Ile Gln Asn Leu His  
 225 230 235 240

Ala Val Ala Thr Glu Asn Leu Gly Phe Gly Met Arg Ile Val Glu Gln  
 245 250 255



Val Val Val Ala Val Glu Met Val Phe Gly Asn Val Gln His Arg Arg  
 260 265 270  
 Arg Ser Arg Thr Gln Ala Phe Gly Val Phe Gln Leu Glu Ala Gly Lys  
 275 280 285  
 Leu Gln His Pro His Val Arg Leu Phe Ala Phe Ala Leu Pro Phe Arg  
 290 295 300  
 Leu Gln Asn Arg Arg Ala Asp Ile Ala Arg Asp Asn Gly Ile Gln Pro  
 305 310 315 320  
 Ala Leu Asp Thr Glu Ile Ala Asp Gln Ala Arg Tyr Arg Gly Phe Ala  
 325 330 335  
 Val Ala Ala Gly Asn Arg Asn Tyr Leu Val Val Pro Ala Val His Asn  
 340 345 350  
 Val Arg Gln Gln Phe Asp Val Ala Gln His Ala Ser Ala Val Leu Leu  
 355 360 365  
 Glu Arg Leu Asn Ile Arg Leu Pro Leu Ala Asp Ala Gly Thr Glu Ser  
 370 375 380  
 Gln Asn Ile Glu Thr Val Val Gln Arg Ile Phe Gln Thr Ala Arg Val  
 385 390 395 400  
 Lys His Gln Pro Val Lys His Leu Thr Asp Leu Arg His Ala Phe Arg  
 405 410 415  
 Leu Gln Leu Arg Ile Ile Arg Ser Asn Leu Arg Ala Val Phe Ala Gln  
 420 425 430  
 Val Gly Asn His Gly Asn Thr Arg Thr Ala Glu Ser Gly Asp Glu Asp  
 435 440 445  
 Phe Phe Val Leu Lys Ser His Phe Gly Leu Ser  
 450 455

<210> 303  
 <211> 309  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 303  
 atggaaatac ccgtgccgcc aagtcggcg acgaggattt ttttgtttga aagtcatttt 60  
 ggttttgtcc taaaacaaat catattgggc aggagacgtc cgcccttgcc caagccgctt 120  
 tcagacggca tcgcgagccg attaataacc cgccttcagg cgttgggtcat tgtcgcagct 180  
 gttttggtct ccgttttgac aagccttgcc aagccattgt tgagcgagcg caaggtcttg 240  
 gcgcacgccg cgtccatcgt aatacatcaa gcccaaattg tattgggctt gggcatcccc 300  
 ttgttctga 309

<210> 304  
 <211> 102

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 304

```
Met Glu Ile Pro Val Pro Pro Ser Pro Ala Thr Arg Ile Phe Leu Phe
  1             5             10             15

Glu Ser His Phe Gly Phe Val Leu Lys Gln Ile Ile Leu Gly Arg Arg
          20             25             30

Arg Pro Pro Leu Pro Lys Pro Leu Ser Asp Gly Ile Ala Ser Arg Leu
          35             40             45

Ile Thr Arg Leu Gln Ala Leu Val Ile Val Ala Ala Val Leu Val Ser
          50             55             60

Val Leu Thr Ser Leu Ala Lys Pro Leu Leu Ser Glu Arg Lys Val Leu
          65             70             75             80

Ala His Ala Ala Ser Ile Val Ile His Gln Ala Gln Ile Val Leu Gly
          85             90             95

Leu Gly Ile Pro Leu Phe
          100
```

<210> 305

<211> 306

<212> DNA

<213> *Neisseria meningitidis*

<400> 305

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atggaataac ccgtaccgcc gagtccggcg acgaggattt ttttgtttga aaagtcattt 60
tggtttgtcc taaaacaaat catattgagc aggagatgtc cgcccctgcc caagccgctt 120
tcagacggca tcgcgagctg ttcaataacc cgccttcagg cgttggcat tgcgcagcc 180
gtcttggctt ccgttttgac aagccttgcc aaaccattct tgtgcaaggg cgcggtcttg 240
gcgcacgccg cgtctttcgg catacatcac gcccaaattg ttttgggctt gggctacccc 300
ctgcgc                                           306
```

<210> 306

<211> 102

<212> PRT

<213> *Neisseria meningitidis*

<400> 306

```
Met Glu Ile Pro Val Pro Pro Ser Pro Ala Thr Arg Ile Phe Leu Phe
  1             5             10             15

Glu Lys Ser Phe Trp Phe Val Leu Lys Gln Ile Ile Leu Ser Arg Arg
          20             25             30

Cys Pro Pro Leu Pro Lys Pro Leu Ser Asp Gly Ile Ala Ser Cys Ser
          35             40             45

Ile Thr Arg Leu Gln Ala Leu Val Ile Val Ala Ala Val Leu Val Ser
          50             55             60
```

Val Leu Thr Ser Leu Ala Lys Pro Phe Leu Cys Lys Gly Ala Val Leu  
65 70 75 80

Ala His Ala Ala Ser Phe Gly Ile His His Ala Gln Ile Val Leu Gly  
85 90 95

Leu Gly Tyr Pro Leu Arg  
100

<210> 307  
<211> 288  
<212> DNA  
<213> Neisseria meningitidis

<400> 307  
atggaaatac ccgtgccgcc aagtcggcg acgaggattt ttttgttttg gaaatcattt 60  
tggtttgtcc taaaacaaat catattgagc aggggatgtc tgatcctgct caagccgctt 120  
tcagacggca tcgcgagctg ttcaataacc cgctttcagg cgttgggtcat tgtcgcagct 180  
gtcttggtat ccgttttgac aagccttgcc aagccattct tgtgcaaggg cgcggtcttg 240  
gcgcacgccg cgtctttcgg catacatcac gcccaaattg ttttgggc 288

<210> 308  
<211> 96  
<212> PRT  
<213> Neisseria meningitidis

<400> 308  
Met Glu Ile Pro Val Pro Pro Ser Pro Ala Thr Arg Ile Phe Leu Phe  
1 5 10 15

Trp Lys Ser Phe Trp Phe Val Leu Lys Gln Ile Ile Leu Ser Arg Gly  
20 25 30

Cys Leu Ile Leu Leu Lys Pro Leu Ser Asp Gly Ile Ala Ser Cys Ser  
35 40 45

Ile Thr Arg Phe Gln Ala Leu Val Ile Val Ala Ala Val Leu Val Ser  
50 55 60

Val Leu Thr Ser Leu Ala Lys Pro Phe Leu Cys Lys Gly Ala Val Leu  
65 70 75 80

Ala His Ala Ala Ser Phe Gly Ile His His Ala Gln Ile Val Leu Gly  
85 90 95

<210> 309  
<211> 1521  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 309

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accttttaaaa taacgccttt acgcactaaa aaccaaccgg aacgcaacat tatgatgaaa 120
aatcgagtaa gcaacatcca ttttgtcgg atcggcgggc tcggcatgag cggtatcgcc 180
gaagtcttgc acaatttggg ctttaaagtt tccggttcgg atcaggcgcg aaatgccgct 240
accgagcatt tgagcagcct gggcattcaa gtttatcccg gccataccgc agaacacgtt 300
aacggcgcg atgtcgtcgt tgcctctacc gccgtcaaga aagaaaatcc cgaagtgtgc 360
gctgcggttg agcggcaaat tcccgttatt ccgcgcgct tgatgctggc agagctgatg 420
cgcttccgtg acggcatcgc cattgccgg acgcacggca aaaccacgac caccagcctg 480
accgcctcca tcctcggcgc ggcaggactc gacccactt tcgttatcgg cggcaaactc 540
aacgccgcag gcaccaacgc ccgcttgggc aaaggcgaat acatcgttgc cgaagccgac 600
gaatccgatg cctctttcct acatctgacc ccgattatgt ccgtcgttac caatatcgac 660
gaagaccata tggataccta cgggcacagc gtcgaaaaac tgcatacaggc gtttatcgat 720
ttcatccacc gtatgccctt ctacggcaaa gcctttttgt gtgttgacag cgaacacgtc 780
cgcgcgattt tgcccaaagt gagcaaacct tatgctactt acggttttga cgataccgcc 840
gacatctacg ccaccgacat cgaaaacgtc ggcgcgcaaa tgaaattcac cgtccatgtt 900
caaatgaaag gacatgagca ggggtcgttt gaagtcgtgc tgaatatgcc cggcagacac 960
aacgtgctga acgcattggc agccatcggc gtggcgctgg aagtcggcgc atcggttgaa 1020
gcgatccaaa aaggttgcgt cggctttgaa ggctcgcc gccgcttcca aaaatacggc 1080
gacatcaagt tgccaaacgg cgggaccgct ttgctggttg acgattacgg acaccacccc 1140
gtcgaaatgg cggcaaccct tgccgctgca cgcgcgcgct atccggaaaa acgtttggtg 1200
ctcgcttcc agccgcaccg ctataccgc acgcgcgatt tgtttgaaga ctttaccaaa 1260
gtactcaata ccgttgatgc gctggtactg accgaagttt atgccgcgg cgaagagccg 1320
gttgccgcgc ccgactcccg cgccttggcg cgtgctatcc gcgtattggg caaacttgag 1380
ccgatttact gcgaaaatgt cgccgacctg ccgcaaatgc tgatgaatgt tttacaggat 1440
ggcgatgttg tgttgaatat ggggtcgggg agcatcaacc gcgttccttc cgcgctgttg 1500
gaattgtcga aacagatttg a 1521
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<210> 310

<211> 506

<212> PRT

<213> Neisseria gonorrhoeae

<400> 310

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Met Phe Phe Ile Ser Ile Arg Tyr Ile Phe Val Arg Lys Leu Trp Cys
  1                      5                      10                      15

Ala Asn Gly Gln Thr Phe Lys Ile Thr Pro Leu Arg Thr Lys Asn Gln
      20                      25                      30

Pro Glu Arg Asn Ile Met Met Lys Asn Arg Val Ser Asn Ile His Phe
      35                      40                      45

Val Gly Ile Gly Gly Val Gly Met Ser Gly Ile Ala Glu Val Leu His
      50                      55                      60

Asn Leu Gly Phe Lys Val Ser Gly Ser Asp Gln Ala Arg Asn Ala Ala
      65                      70                      75                      80

Thr Glu His Leu Ser Ser Leu Gly Ile Gln Val Tyr Pro Gly His Thr
      85                      90                      95

Ala Glu His Val Asn Gly Ala Asp Val Val Val Ala Ser Thr Ala Val
      100                      105                      110

Lys Lys Glu Asn Pro Glu Val Val Ala Ala Leu Glu Arg Gln Ile Pro
```

115	120	125
Val Ile Pro Arg Ala Leu Met	Leu Ala Glu Leu Met	Arg Phe Arg Asp
130	135	140
Gly Ile Ala Ile Ala Gly Thr His Gly Lys Thr Thr Thr Thr Ser Leu		
145	150	155 160
Thr Ala Ser Ile Leu Gly Ala Ala Gly Leu Asp Pro Thr Phe Val Ile		
	165	170 175
Gly Gly Lys Leu Asn Ala Ala Gly Thr Asn Ala Arg Leu Gly Lys Gly		
	180	185 190
Glu Tyr Ile Val Ala Glu Ala Asp Glu Ser Asp Ala Ser Phe Leu His		
	195	200 205
Leu Thr Pro Ile Met Ser Val Val Thr Asn Ile Asp Glu Asp His Met		
	210	215 220
Asp Thr Tyr Gly His Ser Val Glu Lys Leu His Gln Ala Phe Ile Asp		
	225	230 235 240
Phe Ile His Arg Met Pro Phe Tyr Gly Lys Ala Phe Leu Cys Val Asp		
	245	250 255
Ser Glu His Val Arg Ala Ile Leu Pro Lys Val Ser Lys Pro Tyr Ala		
	260	265 270
Thr Tyr Gly Leu Asp Asp Thr Ala Asp Ile Tyr Ala Thr Asp Ile Glu		
	275	280 285
Asn Val Gly Ala Gln Met Lys Phe Thr Val His Val Gln Met Lys Gly		
	290	295 300
His Glu Gln Gly Ser Phe Glu Val Val Leu Asn Met Pro Gly Arg His		
	305	310 315 320
Asn Val Leu Asn Ala Leu Ala Ala Ile Gly Val Ala Leu Glu Val Gly		
	325	330 335
Ala Ser Val Glu Ala Ile Gln Lys Gly Leu Leu Gly Phe Glu Gly Val		
	340	345 350
Gly Arg Arg Phe Gln Lys Tyr Gly Asp Ile Lys Leu Pro Asn Gly Gly		
	355	360 365
Thr Ala Leu Leu Val Asp Asp Tyr Gly His His Pro Val Glu Met Ala		
	370	375 380
Ala Thr Leu Ala Ala Ala Arg Gly Ala Tyr Pro Glu Lys Arg Leu Val		
	385	390 395 400
Leu Ala Phe Gln Pro His Arg Tyr Thr Arg Thr Arg Asp Leu Phe Glu		
	405	410 415
Asp Phe Thr Lys Val Leu Asn Thr Val Asp Ala Leu Val Leu Thr Glu		

420	425	430
Val Tyr Ala Ala Gly Glu Glu Pro Val Ala Ala Ala Asp Ser Arg Ala		
435	440	445
Leu Ala Arg Ala Ile Arg Val Leu Gly Lys Leu Glu Pro Ile Tyr Cys		
450	455	460
Glu Asn Val Ala Asp Leu Pro Gln Met Leu Met Asn Val Leu Gln Asp		
465	470	475
Gly Asp Val Val Leu Asn Met Gly Ala Gly Ser Ile Asn Arg Val Pro		
485	490	495
Ser Ala Leu Leu Glu Leu Ser Lys Gln Ile		
500	505	

<210> 311  
 <211> 1521  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 311

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ccctttaaaa	taacgccttt	acgcatcgaa	aatccaccgg	aacgcaacat	tatgatgaaa	120
aatcgagtta	ccaacatcca	ttttgtcgg	atcggcggcg	tcggcatgag	cggcatcgcc	180
gaagtcttgc	acaatttggg	ctttaaaagt	tccggttcgg	atcaggcgcg	aaatgccgct	240
accgagcatt	tgggcagcct	gggcattcaa	gtttatcccg	gccataccgc	cgaacacgtt	300
aacggtgcgg	atgtcgtcgt	tacctctacc	gccgtcaaaa	aagaaaatcc	cgaagttgtc	360
gctgcgttgg	agcagcaaat	tcccgttatt	ccgcgcgccc	tgatgttggc	ggagttgatg	420
cgcttccgtg	acggcatcgc	cattgccggc	acgcacggca	aaaccacgac	caccagcctg	480
accgcctcca	tctcggcg	ggcaggactt	gacccgactt	tcgttatcgg	cggcaaaactc	540
aacgccgcag	gcactaacgc	ccgcttgggc	aaaggcgaat	acatcgttgc	cgaagccgac	600
gagtcggatg	catcctttct	gcacctgaca	ccgattatgt	ccgtcgttac	caatatcgac	660
gaagaccata	tggataccta	cgggcacagc	gtcgaaaaac	tgcatcaggc	gtttatcgat	720
ttcatccacc	gtatgccctt	ctacggcaaa	gcctttttgt	gtattgacag	cgaacacgtc	780
cgcgcgattt	tgcccaaagt	gagcaaacct	tatgctactt	acggtttgga	cgataaccgcc	840
gacatctacg	ccaccgacat	cgaaaacgtc	ggcgcgcaaa	tgaaattcac	cgtccatgtt	900
caaatgaaag	gacatgagca	ggggtcgttt	gaagtcgtgc	tgaatatgcc	cggcagacac	960
aacgtgctga	acgcattggc	agccatcggc	gtggcgctgg	aagtcggcg	atcggttgaa	1020
gcgatccaaa	aaggcttgct	cggctttgaa	ggcgtcggcc	gccgcttcca	aaaatacggc	1080
gacatcaagt	tgccaaacgg	cgggaccg	ctcttggtgg	acgactacgg	acaccacccc	1140
gtcgaaatgg	cggcgaccct	tgccgcccga	cgcggcgctg	atctggaaaa	acgttttgta	1200
ctcgcttcc	agccgcaccg	ctatacccgc	acgcgcgatt	tgtttgaa	ctttaccaaa	1260
gtcctcaata	ccgttgacgc	gctggtgctg	accgaagttt	atgccgccgg	tgaagagccg	1320
attgccgcgg	ccgattcccg	cgctcttgcc	cgcgccatcc	gcgtgttggg	caaactcgag	1380
ccgatttact	gcgaaaacgt	tgccgatctg	cccgaatgc	tgttgaacgt	tttgcaggac	1440
ggcgacatcg	tgttgaatat	ggcgcgggga	agcatcaacc	gcgtccccgc	cgcgctgctg	1500
gcattgtcga	aacagatttg	a				1521

<210> 312  
 <211> 506  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 312

Met	Phe	Phe	Ile	Ser	Ile	Arg	Tyr	Ile	Phe	Val	Arg	Lys	Leu	Trp	Arg	
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Ala	Asn	Gly	Gln	Pro	Phe	Lys	Ile	Thr	Pro	Leu	Arg	Ile	Glu	Asn	Pro	
			20					25					30			
Pro	Glu	Arg	Asn	Ile	Met	Met	Lys	Asn	Arg	Val	Thr	Asn	Ile	His	Phe	
			35				40					45				
Val	Gly	Ile	Gly	Gly	Val	Gly	Met	Ser	Gly	Ile	Ala	Glu	Val	Leu	His	
	50					55					60					
Asn	Leu	Gly	Phe	Lys	Val	Ser	Gly	Ser	Asp	Gln	Ala	Arg	Asn	Ala	Ala	
65					70				75						80	
Thr	Glu	His	Leu	Gly	Ser	Leu	Gly	Ile	Gln	Val	Tyr	Pro	Gly	His	Thr	
			85						90					95		
Ala	Glu	His	Val	Asn	Gly	Ala	Asp	Val	Val	Val	Thr	Ser	Thr	Ala	Val	
			100					105					110			
Lys	Lys	Glu	Asn	Pro	Glu	Val	Val	Ala	Ala	Leu	Glu	Gln	Gln	Ile	Pro	
		115					120					125				
Val	Ile	Pro	Arg	Ala	Leu	Met	Leu	Ala	Glu	Leu	Met	Arg	Phe	Arg	Asp	
	130					135					140					
Gly	Ile	Ala	Ile	Ala	Gly	Thr	His	Gly	Lys	Thr	Thr	Thr	Thr	Ser	Leu	
145					150					155					160	
Thr	Ala	Ser	Ile	Leu	Gly	Ala	Ala	Gly	Leu	Asp	Pro	Thr	Phe	Val	Ile	
				165					170					175		
Gly	Gly	Lys	Leu	Asn	Ala	Ala	Gly	Thr	Asn	Ala	Arg	Leu	Gly	Lys	Gly	
			180					185					190			
Glu	Tyr	Ile	Val	Ala	Glu	Ala	Asp	Glu	Ser	Asp	Ala	Ser	Phe	Leu	His	
	195						200					205				
Leu	Thr	Pro	Ile	Met	Ser	Val	Val	Thr	Asn	Ile	Asp	Glu	Asp	His	Met	
	210					215					220					
Asp	Thr	Tyr	Gly	His	Ser	Val	Glu	Lys	Leu	His	Gln	Ala	Phe	Ile	Asp	
225					230					235					240	
Phe	Ile	His	Arg	Met	Pro	Phe	Tyr	Gly	Lys	Ala	Phe	Leu	Cys	Ile	Asp	
				245					250					255		
Ser	Glu	His	Val	Arg	Ala	Ile	Leu	Pro	Lys	Val	Ser	Lys	Pro	Tyr	Ala	
			260					265					270			
Thr	Tyr	Gly	Leu	Asp	Asp	Thr	Ala	Asp	Ile	Tyr	Ala	Thr	Asp	Ile	Glu	
		275					280					285				
Asn	Val	Gly	Ala	Gln	Met	Lys	Phe	Thr	Val	His	Val	Gln	Met	Lys	Gly	
	290					295						300				

His Glu Gln Gly Ser Phe Glu Val Val Leu Asn Met Pro Gly Arg His  
305 310 315 320

Asn Val Leu Asn Ala Leu Ala Ala Ile Gly Val Ala Leu Glu Val Gly  
325 330 335

Ala Ser Val Glu Ala Ile Gln Lys Gly Leu Leu Gly Phe Glu Gly Val  
340 345 350

Gly Arg Arg Phe Gln Lys Tyr Gly Asp Ile Lys Leu Pro Asn Gly Gly  
355 360 365

Thr Ala Leu Leu Val Asp Asp Tyr Gly His His Pro Val Glu Met Ala  
370 375 380

Ala Thr Leu Ala Ala Ala Arg Gly Ala Tyr Leu Glu Lys Arg Leu Val  
385 390 395 400

Leu Ala Phe Gln Pro His Arg Tyr Thr Arg Thr Arg Asp Leu Phe Glu  
405 410 415

Asp Phe Thr Lys Val Leu Asn Thr Val Asp Ala Leu Val Leu Thr Glu  
420 425 430

Val Tyr Ala Ala Gly Glu Glu Pro Ile Ala Ala Ala Asp Ser Arg Ala  
435 440 445

Leu Ala Arg Ala Ile Arg Val Leu Gly Lys Leu Glu Pro Ile Tyr Cys  
450 455 460

Glu Asn Val Ala Asp Leu Pro Glu Met Leu Leu Asn Val Leu Gln Asp  
465 470 475 480

Gly Asp Ile Val Leu Asn Met Gly Ala Gly Ser Ile Asn Arg Val Pro  
485 490 495

Ala Ala Leu Leu Ala Leu Ser Lys Gln Ile  
500 505

<210> 313

<211> 1521

<212> DNA

<213> Neisseria meningitidis

<400> 313

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aatcgagtga ccaacatcca ttttgtcggg atcggcgggcg tcggcatgag cggtatcgcc 180  
gaagtcttgc acaatttggg ttttaaagtt tccggttcgg atcaggcgcg aaatgccgct 240  
accgagcatt tgggcagcct gggcattcaa gtttatcccg gccataccgc agaacacggt 300  
aacggtgcgg atgtcgtcgt tacctctacc gccgtcaaaa aagaaaatcc cgaagttgtc 360  
gctgcgttgg agcagcaaat tcccgttatt ccgcgcgccc tgatgttggc ggagttgatg 420  
cgcttcggtg acggcatcgc cattgccggc acgcacggca aaaccacgac caccagcctg 480  
accgcctcca tcctcggcgc ggcaggactt gaccgcgactt tcgttatcgg cggcaaaactc 540  
aacgccgcag gcaccaacgc ccgcttgggc aaaggcgaat acatcgttgc cgaagccgac 600



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gagtcggatg catcctttct gcacctgaca ccgattatgt ccgtcgttac caatatcgac 660
gaagaccata tggataccta cgggcacagt gttgagaagc tgcatacaggc gtttatcgat 720
ttcatccacc gtatgccctt ctacggcaaa gcctttttgt gtattgacag cgaacacgtc 780
cgcgcgattt tgcccaaagt gagcaaacct tatgtactt acggtttgga cgataccgcc 840
gacatctacg ccaccgacat cgaaaacgtc ggcgcgcaaa tgaaattcac cgtccatggt 900
caaatgaaag gacatgagca ggggtcgttt gaagtcgtgc tgaatatgcc cggcagacac 960
aacgtgctga acgcattggc agccatcggc gtggcgctgg aagtcggcgc atcggttgaa 1020
gcgatccaaa aaggcttgct cggttttgaa ggtgtcggcc gccgcttcca aaaatacggc 1080
gacatcaagt tgccaaacgg tggaaccgcg ctcttggtgg acgactacgg acaccacccc 1140
gtcgaaatgg cggcgaccct ttccgcccga cgcggcgcgt atccggaaaa acgtttggta 1200
ctcgcccttc agccgcaccg ctataccgcg acgcgcgatt tgtttgaaga ctttaccaaa 1260
gtcctcaata ccgttgacgc gctggtgctg accgaagttt atgccgccgg tgaagagccg 1320
attgccgccg ctgattcccg cgctcttgcc cgcgccatcc gcgtgttggg caaactcgag 1380
ccgatttact gcgaaaacgt tgccgatctg cccgaaatgc tgttgaacgt tttgcaggac 1440
ggcgacatcg tgttgaatat ggggtcggga agcatcaacc gcgtccccgc cgcgctgctg 1500
gaattgtcga aacagatttg a 1521

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<210> 314

<211> 506

<212> PRT

<213> Neisseria meningitidis

<400> 314

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Met Phe Phe Ile Ser Ile Arg Tyr Ile Phe Val Arg Lys Leu Trp Arg
  1             5             10             15

Ala Asn Gly Gln Pro Phe Lys Ile Thr Pro Leu Arg Ile Glu Asn Pro
    20             25             30

Pro Glu Arg Asn Ile Met Met Lys Asn Arg Val Thr Asn Ile His Phe
    35             40             45

Val Gly Ile Gly Gly Val Gly Met Ser Gly Ile Ala Glu Val Leu His
    50             55             60

Asn Leu Gly Phe Lys Val Ser Gly Ser Asp Gln Ala Arg Asn Ala Ala
    65             70             75             80

Thr Glu His Leu Gly Ser Leu Gly Ile Gln Val Tyr Pro Gly His Thr
    85             90             95

Ala Glu His Val Asn Gly Ala Asp Val Val Val Thr Ser Thr Ala Val
   100             105             110

Lys Lys Glu Asn Pro Glu Val Val Ala Ala Leu Glu Gln Gln Ile Pro
   115             120             125

Val Ile Pro Arg Ala Leu Met Leu Ala Glu Leu Met Arg Phe Arg Asp
   130             135             140

Gly Ile Ala Ile Ala Gly Thr His Gly Lys Thr Thr Thr Thr Ser Leu
   145             150             155             160

Thr Ala Ser Ile Leu Gly Ala Ala Gly Leu Asp Pro Thr Phe Val Ile
   165             170             175

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Gly Gly Lys Leu Asn Ala Ala Gly Thr Asn Ala Arg Leu Gly Lys Gly  
 180 185 190  
 Glu Tyr Ile Val Ala Glu Ala Asp Glu Ser Asp Ala Ser Phe Leu His  
 195 200 205  
 Leu Thr Pro Ile Met Ser Val Val Thr Asn Ile Asp Glu Asp His Met  
 210 215 220  
 Asp Thr Tyr Gly His Ser Val Glu Lys Leu His Gln Ala Phe Ile Asp  
 225 230 235 240  
 Phe Ile His Arg Met Pro Phe Tyr Gly Lys Ala Phe Leu Cys Ile Asp  
 245 250 255  
 Ser Glu His Val Arg Ala Ile Leu Pro Lys Val Ser Lys Pro Tyr Ala  
 260 265 270  
 Thr Tyr Gly Leu Asp Asp Thr Ala Asp Ile Tyr Ala Thr Asp Ile Glu  
 275 280 285  
 Asn Val Gly Ala Gln Met Lys Phe Thr Val His Val Gln Met Lys Gly  
 290 295 300  
 His Glu Gln Gly Ser Phe Glu Val Val Leu Asn Met Pro Gly Arg His  
 305 310 315 320  
 Asn Val Leu Asn Ala Leu Ala Ala Ile Gly Val Ala Leu Glu Val Gly  
 325 330 335  
 Ala Ser Val Glu Ala Ile Gln Lys Gly Leu Leu Gly Phe Glu Gly Val  
 340 345 350  
 Gly Arg Arg Phe Gln Lys Tyr Gly Asp Ile Lys Leu Pro Asn Gly Gly  
 355 360 365  
 Thr Ala Leu Leu Val Asp Asp Tyr Gly His His Pro Val Glu Met Ala  
 370 375 380  
 Ala Thr Leu Ser Ala Ala Arg Gly Ala Tyr Pro Glu Lys Arg Leu Val  
 385 390 395 400  
 Leu Ala Phe Gln Pro His Arg Tyr Thr Arg Thr Arg Asp Leu Phe Glu  
 405 410 415  
 Asp Phe Thr Lys Val Leu Asn Thr Val Asp Ala Leu Val Leu Thr Glu  
 420 425 430  
 Val Tyr Ala Ala Gly Glu Glu Pro Ile Ala Ala Ala Asp Ser Arg Ala  
 435 440 445  
 Leu Ala Arg Ala Ile Arg Val Leu Gly Lys Leu Glu Pro Ile Tyr Cys  
 450 455 460  
 Glu Asn Val Ala Asp Leu Pro Glu Met Leu Leu Asn Val Leu Gln Asp  
 465 470 475 480

Gly Asp Ile Val Leu Asn Met Gly Ala Gly Ser Ile Asn Arg Val Pro  
485 490 495

Ala Ala Leu Leu Glu Leu Ser Lys Gln Ile  
500 505

<210> 315

<211> 831

<212> DNA

<213> Neisseria gonorrhoeae

<400> 315

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tcgctggaca gcggtaccgc cattttgaac gccttaaaaa gcaaaggcat agacgcatac 120
gccttcgacc ctaaggaaac gccgttatcc gaactgaagg agcggggcct tcagacggca 180
ttcaacatcc ttacacgtac ttacggcgaa gacggggctg ttcagggtgc attggaactg 240
ttgggcattc cctataccgg cagcgggtgc gccgcctccg ccatcggcat ggacaaatac 300
cgctgcaaac tgatttggca ggcattggga ttaccggttc ccgagttcgc cgtactgtac 360
gatgataccg atttcgatgc cgtcgaagaa aaattgggtc tgccgatgtt tgtgaagccg 420
gcggccgaag gcagcagcgt cggcgtggta aaagtcaaag aaaaaggccg tctgaaaagc 480
gtttacgaag aattgaaaca ctttcagggg cgaaatcatt gccgaacgtt ttatcggcgg 540
cggcgaatat tcttgccccg tcctgaacgg caaagggtcg cccggcatac acatcatccc 600
cgcaaccgag ttttacgact acgaagccaa gtacaaccga gacgacacca tttatcaatg 660
tccttcggaa gatttgaccg aagccgaaga aagcctgatg cgcgaaactg cggttcgcgg 720
cgcacaggca atcgggtgcg aaggctgcgt gcgcgtcgat ttcctcaaag ataccgacgg 780
caaactctat ctgttggaat tcaacaccct gcccggtatg accggccata g 831
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<210> 316

<211> 276

<212> PRT

<213> Neisseria gonorrhoeae

<400> 316

Met Gln Asn Phe Gly Lys Val Ala Val Leu Met Gly Gly Phe Ser Ser  
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Glu Arg Glu Ile Ser Leu Asp Ser Gly Thr Ala Ile Leu Asn Ala Leu  
20 25 30

Lys Ser Lys Gly Ile Asp Ala Tyr Ala Phe Asp Pro Lys Glu Thr Pro  
35 40 45

Leu Ser Glu Leu Lys Glu Arg Gly Phe Gln Thr Ala Phe Asn Ile Leu  
50 55 60

His Gly Thr Tyr Gly Glu Asp Gly Ala Val Gln Gly Ala Leu Glu Leu  
65 70 75 80

Leu Gly Ile Pro Tyr Thr Gly Ser Gly Val Ala Ala Ser Ala Ile Gly  
85 90 95

Met Asp Lys Tyr Arg Cys Lys Leu Ile Trp Gln Ala Leu Gly Leu Pro  
100 105 110

Val Pro Glu Phe Ala Val Leu Tyr Asp Asp Thr Asp Phe Asp Ala Val

115		120		125
Glu Glu Lys Leu Gly Leu Pro Met Phe Val Lys Pro Ala Ala Glu Gly				
130		135		140
Ser Ser Val Gly Val Val Lys Val Lys Glu Lys Gly Arg Leu Lys Ser				
145		150		155
Val Tyr Glu Glu Leu Lys His Leu Gln Gly Arg Asn His Cys Arg Thr				
	165		170	175
Phe Tyr Arg Arg Arg Arg Ile Phe Leu Pro Arg Pro Glu Arg Gln Arg				
	180		185	190
Ala Ala Arg His Thr His His Pro Arg Asn Arg Val Leu Arg Leu Arg				
	195		200	205
Ser Gln Val Gln Pro Arg Arg His His Leu Ser Met Ser Phe Gly Arg				
	210		215	220
Phe Asp Arg Ser Arg Arg Lys Pro Asp Ala Arg Thr Gly Gly Ser Arg				
225		230		235
Arg Thr Gly Asn Arg Cys Gly Arg Leu Arg Ala Arg Arg Phe Pro Gln				
	245		250	255
Arg Tyr Arg Arg Gln Thr Leu Ser Val Gly Asn Gln His Pro Ala Arg				
	260		265	270
Tyr Asp Arg Pro				
275				

<210> 317  
 <211> 830  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 317  
 atgcagaatt ttggcaaagt ggccgtattg atgggcggtt tttccagcga acgagaaatc 60  
 tcgctggaca gcggcaccgc cattttgaat gctttaaaaa gcaaaggcat agacgcatac 120  
 gccttcgata ctaaagaaac cccattgtct gaattgaagg cacaaggttt tcagacggca 180  
 ttcaacatcc ttcacggtag ttacggcraa gacggggcgg ttcagggtgc attggaactg 240  
 ttgggcattc cctataccgg cagcgggtgc gccgcattcc ccatcggcat ggacaaatac 300  
 cgctgcaaac tgatttggca ggcattggga ttgcccggtc ccgagttcgc cgtcctgcac 360  
 gacgacactg atttcgatgc cgtcgaagaa aaattgggcc tgccgatgtt tgtgaaaccg 420  
 gcggccgaag gcagcagcgt aggcgtggtg aaagtcaaag gaaaaggccg tctgaaaagc 480  
 gtttacgaag aattgaaaca ccttcagggc gaaatcattg ccgaacgttt tatcggcggc 540  
 ggccaatatt cctgccccgt cctgaacggc aaagggtgc ccggcataca catcattccc 600  
 gcaaccgagt tttacgacta cgaagccaag tacaaccgcg acgacaccat ttatcaatgt 660  
 ccttcggaag atttgaccga agccgaagaa agcctgatgc gcgaactggc ggttcgcggc 720  
 gcgcaggcaa tcggtgcgga aggctgcgtg cgcgtcgatt tcctcaaaga taccgacggc 780  
 aaactctatc tgttggaat caacaccctg cccggtatga cgagccatag 830

<210> 318  
 <211> 276

<212> PRT

<213> Neisseria meningitidis

<400> 318

Met Gln Asn Phe Gly Lys Val Ala Val Leu Met Gly Gly Phe Ser Ser  
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Glu Arg Glu Ile Ser Leu Asp Ser Gly Thr Ala Ile Leu Asn Ala Leu  
20 25 30  
Lys Ser Lys Gly Ile Asp Ala Tyr Ala Phe Asp Pro Lys Glu Thr Pro  
35 40 45  
Leu Ser Glu Leu Lys Ala Gln Gly Phe Gln Thr Ala Phe Asn Ile Leu  
50 55 60  
His Gly Thr Tyr Gly Xaa Asp Gly Ala Val Gln Gly Ala Leu Glu Leu  
65 70 75 80  
Leu Gly Ile Pro Tyr Thr Gly Ser Gly Val Ala Ala Ser Ala Ile Gly  
85 90 95  
Met Asp Lys Tyr Arg Cys Lys Leu Ile Trp Gln Ala Leu Gly Leu Pro  
100 105 110  
Val Pro Glu Phe Ala Val Leu His Asp Asp Thr Asp Phe Asp Ala Val  
115 120 125  
Glu Glu Lys Leu Gly Leu Pro Met Phe Val Lys Pro Ala Ala Glu Gly  
130 135 140  
Ser Ser Val Gly Val Val Lys Val Lys Gly Lys Gly Arg Leu Lys Ser  
145 150 155 160  
Val Tyr Glu Glu Leu Lys His Leu Gln Xaa Arg Asn His Cys Arg Thr  
165 170 175  
Phe Tyr Arg Arg Arg Arg Ile Phe Leu Pro Arg Pro Glu Arg Gln Arg  
180 185 190  
Ala Ala Arg His Thr His His Ser Arg Asn Arg Val Leu Arg Leu Arg  
195 200 205  
Ser Gln Val Gln Pro Arg Arg His His Leu Ser Met Ser Phe Gly Arg  
210 215 220  
Phe Asp Arg Ser Arg Arg Lys Pro Asp Ala Arg Thr Gly Gly Ser Arg  
225 230 235 240  
Arg Ala Gly Asn Arg Cys Gly Arg Leu Arg Ala Arg Arg Phe Pro Gln  
245 250 255  
Arg Tyr Arg Arg Gln Thr Leu Ser Val Gly Asn Gln His Pro Ala Arg  
260 265 270  
Tyr Asp Glu Pro  
275

<210> 319  
 <211> 830  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 319  
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 tcgctggaca gcggcaccgc cattttgaat gctttaaaaa gcaaaggcat agacgcatac 120  
 gccttcgata ccaaggaaac cccattgtct gaattgaagg cacaaggttt tcagacggca 180  
 ttcaacatcc ttacgggtac ttacggcgaa gacggggctg ttcaggggtc attggaactg 240  
 ttgggcattc cctataccgg cagcgggtgc gccgcatccg ccatcggcac ggacaaatac 300  
 cgctgcaaac tgatttggca ggcattggga ttgcccgttc ccgagttcgc cgtcctgcac 360  
 gacgacactg atttcgatgc cgtcgaagaa aaattgggccc tgccgatgtt tgtgaaaccg 420  
 gcggccgaag gcagcagcgt aggcgtggta aaagtcaaag gaaaaggccg tctgaaaagc 480  
 gtttacgaag aattgaaaca ctttcagggc gaaatcattg ccgaacgggt tatcgggcgc 540  
 ggccaatatt cctgcctgt gttgaacggc aaaggcctgc ccggcataca catcatcccc 600  
 gcgaccgagt tttatgacta cgaagccaag tacaaccgca acgacaccat ttatcaatgt 660  
 ctttcggaag atctgaccga agccgaagaa agcctgatgc gcgaactggc gggtcgcggc 720  
 gcgcaggcaa tcggtgcgga aggctgcgtg cgcgtcgatt tcctcaaaga taccgacggc 780  
 aaactctatc tgttggaaat caacaccctg cccggtatga ccggccatag 830

<210> 320  
 <211> 275  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 320  
 Met Gln Asn Phe Gly Lys Val Ala Val Leu Met Gly Gly Phe Ser Ser  
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 Glu Arg Glu Ile Ser Leu Asp Ser Gly Thr Ala Ile Leu Asn Ala Leu  
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 Lys Ser Lys Gly Ile Asp Ala Tyr Ala Phe Asp Pro Lys Glu Thr Pro  
 35 40 45  
 Leu Ser Glu Leu Lys Ala Gln Gly Phe Gln Thr Ala Phe Asn Ile Leu  
 50 55 60  
 His Gly Thr Tyr Gly Glu Asp Gly Ala Val Gln Gly Ala Leu Glu Leu  
 65 70 75 80  
 Leu Gly Ile Pro Tyr Thr Gly Ser Gly Val Ala Ala Ser Ala Ile Gly  
 85 90 95  
 Met Asp Lys Tyr Arg Cys Lys Leu Ile Trp Gln Ala Leu Gly Leu Pro  
 100 105 110  
 Val Pro Glu Phe Ala Val Leu His Asp Asp Thr Asp Phe Asp Ala Val  
 115 120 125  
 Glu Glu Lys Leu Gly Leu Pro Met Phe Val Lys Pro Ala Ala Glu Gly  
 130 135 140

Ser Ser Val Gly Val Val Lys Val Lys Gly Lys Gly Arg Leu Lys Ser  
145 150 155 160

Val Tyr Glu Glu Leu Lys His Phe Gln Xaa Arg Asn His Cys Arg Thr  
165 170 175

Val Tyr Arg Arg Arg Arg Ile Phe Leu Pro Cys Val Glu Arg Gln Arg  
180 185 190

Pro Ala Arg His Thr His His Pro Arg Asp Arg Val Leu Leu Arg Ser  
195 200 205

Gln Val Gln Pro Gln Arg His His Leu Ser Met Ser Phe Gly Arg Ser  
210 215 220

Asp Arg Ser Arg Arg Lys Pro Asp Ala Arg Thr Gly Gly Ser Arg Arg  
225 230 235 240

Ala Gly Asn Arg Cys Gly Arg Leu Arg Ala Arg Arg Phe Pro Gln Arg  
245 250 255

Tyr Arg Arg Gln Thr Leu Ser Val Gly Asn Gln His Pro Ala Arg Tyr  
260 265 270

Asp Arg Pro  
275

<210> 321

<211> 312

<212> DNA

<213> Neisseria gonorrhoeae

<400> 321

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gttttgccgt gcgtaccggc aatggcgatg ccgtcacgga agcgcatcag ctctgccagc 180  
atcaaggcgc gcggaataac gggaatttgc cgctccaacg cagcgacaac ttcgggattt 240  
tctttcttga cggcggtaga ggcaacgacg acatccgcac cgtaaactg ttctgcggta 300  
tgcccggtat aa 312

<210> 322

<211> 103

<212> PRT

<213> Neisseria gonorrhoeae

<400> 322

Met Tyr Ser Pro Leu Pro Lys Arg Ala Leu Val Pro Ala Ala Leu Ser  
1 5 10 15

Leu Pro Pro Ile Thr Lys Val Gly Ser Ser Pro Ala Ala Pro Arg Met  
20 25 30

Glu Ala Val Arg Leu Val Val Val Leu Pro Cys Val Pro Ala Met  
35 40 45

Ala Met Pro Ser Arg Lys Arg Ile Ser Ser Ala Ser Ile Lys Ala Arg  
50 55 60

Gly Ile Thr Gly Ile Cys Arg Ser Asn Ala Ala Thr Thr Ser Gly Phe  
65 70 75 80

Ser Phe Leu Thr Ala Val Glu Ala Thr Thr Thr Ser Ala Pro Leu Thr  
85 90 95

Cys Ser Ala Val Trp Pro Gly  
100

<210> 323

<211> 312

<212> DNA

<213> Neisseria meningitidis

<400> 323

atgtattcgc ctttgcccaa gcgggcgtta gtgcctgcgg cgttgagttt gccgccgata 60  
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gttttgccgt gcgtgccggc aatggcgatg ccgtcacgga agcgcatcaa ctccgccaac 180  
atcagggcgc gcggaataac gggaatttgc tgctccaacg cagcgacaac ttcgggattt 240  
tcttttttga cggcggtaga ggtaacgacg acatccgcac cgtaaacgtg ttcggcggtg 300  
tggccgggat aa 312

<210> 324

<211> 103

<212> PRT

<213> Neisseria meningitidis

<400> 324

Met Tyr Ser Pro Leu Pro Lys Arg Ala Leu Val Pro Ala Ala Leu Ser  
1 5 10 15

Leu Pro Pro Ile Thr Lys Val Gly Ser Ser Pro Ala Ala Pro Arg Met  
20 25 30

Glu Ala Val Arg Leu Val Val Val Val Leu Pro Cys Val Pro Ala Met  
35 40 45

Ala Met Pro Ser Arg Lys Arg Ile Asn Ser Ala Asn Ile Arg Ala Arg  
50 55 60

Gly Ile Thr Gly Ile Cys Cys Ser Asn Ala Ala Thr Thr Ser Gly Phe  
65 70 75 80

Ser Phe Leu Thr Ala Val Glu Val Thr Thr Thr Ser Ala Pro Leu Thr  
85 90 95

Cys Ser Ala Val Trp Pro Gly  
100

<210> 325



<211> 312  
<212> DNA  
<213> *Neisseria meningitidis*

<400> 325  
atgtattcgc ctttgcccaa gcgggcggtg gtgcctgcgg cggtgagttt gccgccgata 60  
acgaaagtcg ggtcaagtcc tgccgcgcgg aggatggagg cggtcaggct ggtggtcgtg 120  
gttttgccgt gcgtgccggc aatggcgatg ccgtcacgga agcgcatcaa ctccgccaac 180  
atcagggcgc gcggaataac ggaatttgc tgctccaacg cagcgacaac ttcgggattt 240  
tcttttttga cggcggtaga ggtaacgacg acatccgcac cgtaaacgtg ttctgcggta 300  
tggccgggat aa 312

<210> 326  
<211> 103  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 326  
Met Tyr Ser Pro Leu Pro Lys Arg Ala Leu Val Pro Ala Ala Leu Ser  
1 5 10 15  
Leu Pro Pro Ile Thr Lys Val Gly Ser Ser Pro Ala Ala Pro Arg Met  
20 25 30  
Glu Ala Val Arg Leu Val Val Val Val Leu Pro Cys Val Pro Ala Met  
35 40 45  
Ala Met Pro Ser Arg Lys Arg Ile Asn Ser Ala Asn Ile Arg Ala Arg  
50 55 60  
Gly Ile Thr Gly Ile Cys Cys Ser Asn Ala Ala Thr Thr Ser Gly Phe  
65 70 75 80  
Ser Phe Leu Thr Ala Val Glu Val Thr Thr Thr Ser Ala Pro Leu Thr  
85 90 95  
Cys Ser Ala Val Trp Pro Gly  
100

<210> 327  
<211> 375  
<212> DNA  
<213> *Neisseria gonorrhoeae*

<400> 327  
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ggtggcgtag atgtcggcgg tatcgtccaa accgtaagta gcataagggt tgctcacttt 120  
gggcaaaatc gcgcggacgt gttcgctgtc aacacacaaa aaggctttgc cgtagaaggg 180  
catacggtgg atgaaatcga taaacgcctg atgcagtttt tcgacgctgt gcccgtaggt 240  
atccatatgg tcttcgtcga tattggtaac gacggacata atcggggtca gtgtaggaaa 300  
gaggcatcgg atcgtcggct tcggcaacga tgtattcgcc tttgccaag cgggcggttg 360  
tgctgcggc gttga 375

<210> 328

<211> 124  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 328  
 Met Ser Phe His Leu Asn Met Asp Gly Glu Phe His Leu Arg Ala Asp  
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 Val Phe Asp Val Gly Gly Val Asp Val Gly Gly Ile Val Gln Thr Val  
                   20                  25                  30  
 Ser Ser Ile Arg Phe Ala His Phe Gly Gln Asn Arg Ala Asp Val Phe  
           35                  40                  45  
 Ala Val Asn Thr Gln Lys Gly Phe Ala Val Glu Gly His Thr Val Asp  
           50                  55                  60  
 Glu Ile Asp Lys Arg Leu Met Gln Phe Phe Asp Ala Val Pro Val Gly  
           65                  70                  75                  80  
 Ile His Met Val Phe Val Asp Ile Gly Asn Asp Gly His Asn Arg Gly  
                   85                  90                  95  
 Gln Cys Arg Lys Glu Ala Ser Asp Arg Arg Leu Arg Gln Arg Cys Ile  
           100                  105                  110  
 Arg Leu Cys Pro Ser Gly Arg Trp Cys Leu Arg Arg  
           115                  120

<210> 329  
 <211> 375  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 329  
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 gggcaaaatc ggcgggacgt gtTCGTgtc aatacacaaa aaggctttgc cgtagaagg 180  
 catacggtag atgaaatcga taaacgcctg atgcagtttt tcgacgctgt gcccgtaggt 240  
 atccatatgg ttttcgtcga tattggtaac gacggacata atcggtgtca gtgcagaaag 300  
 gatgcatccg accgtcggct tcggcaacga tgtattcgcc tttgcccaag cgggcgtag 360  
 tgctgcggc gttga 375

<210> 330  
 <211> 124  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 330  
 Met Ser Phe His Leu Asn Met Asp Gly Glu Phe His Leu Arg Ala Asp  
           1                  5                  10                  15  
 Val Phe Asp Val Gly Gly Val Asp Val Gly Gly Ile Val Gln Thr Val  
                   20                  25                  30



Gln Cys Arg Lys Asp Ala Ser Asp Arg Arg Leu Arg Gln Arg Cys Ile  
100 105 110

Arg Leu Cys Pro Ser Gly Arg Trp Cys Leu Arg Arg  
115 120

<210> 333  
<211> 375  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 333  
atggccggtc ataccgggca ggggtgttgat ttccaacaga tagagtttgc cgtcggtatc 60  
tttgaggaaa tcgacgcgca cgcagccttc cgcaccgatt gcctgtgcgc cgcgaaccgc 120  
cagttcgcgc atcaggcttt cttcggcttc ggtcaaatct tccgaaggac attgataaat 180  
gggtgcgtct cggttgtact tggcttcgta gtcgtaaaac tcggttgccg ggatgatgtg 240  
tatgccgggc agccctttgc cgttcaggac ggggcaggaa tattcgccgc cgccgataaa 300  
acgttcggca atgatttcgc ccctgaagggt gtttcaattc ttcgtaaacg cttttcagac 360  
ggcctttttc tttga 375

<210> 334  
<211> 124  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 334  
Met Ala Gly His Thr Gly Gln Gly Val Asp Phe Gln Gln Ile Glu Phe  
1 5 10 15

Ala Val Gly Ile Phe Glu Glu Ile Asp Ala His Ala Ala Phe Arg Thr  
20 25 30

Asp Cys Leu Cys Ala Ala Asn Arg Gln Phe Ala His Gln Ala Phe Phe  
35 40 45

Gly Phe Gly Gln Ile Phe Arg Arg Thr Leu Ile Asn Gly Val Val Ser  
50 55 60

Val Val Leu Gly Phe Val Val Val Lys Leu Gly Cys Gly Asp Asp Val  
65 70 75 80

Tyr Ala Gly Gln Pro Phe Ala Val Gln Asp Gly Ala Gly Ile Phe Ala  
85 90 95

Ala Ala Asp Lys Thr Phe Gly Asn Asp Phe Ala Pro Glu Gly Val Ser  
100 105 110

Ile Leu Arg Lys Arg Phe Ser Asp Gly Leu Phe Leu  
115 120

<210> 335  
<211> 374

<212> DNA

<213> *Neisseria meningitidis*

<400> 335

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tttgaggaaa tcgacgcgca cgcagccttc cgcaccgatt gcctgcgcgc cgcgaaccgc 120
cagttcgcgc atcaggcttt cttcggcttc ggtcaaatct tccgaaggac attgataaat 180
gggtgcgtcg cggttgtact tggcttcgta gtcgtaaaac tcggttcgcg gaatgatgtg 240
tatgccgggc agccctttgc cgttcaggac ggggcaggaa tattcgccgc cgccgataaa 300
acgttcggca atgatttcgc cctgaaggtg tttcaattct tcgtaaacgc ttttcagacg 360
gccttttcct ttga 374
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<210> 336

<211> 124

<212> PRT

<213> *Neisseria meningitidis*

<400> 336

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Met Ala Arg His Thr Gly Gln Gly Val Asp Phe Gln Gln Ile Glu Phe
  1             5             10             15

Ala Val Gly Ile Phe Glu Glu Ile Asp Ala His Ala Ala Phe Arg Thr
      20             25             30

Asp Cys Leu Arg Ala Ala Asn Arg Gln Phe Ala His Gln Ala Phe Phe
      35             40             45

Gly Phe Gly Gln Ile Phe Arg Arg Thr Leu Ile Asn Gly Val Val Ala
      50             55             60

Val Val Leu Gly Phe Val Val Val Lys Leu Gly Cys Gly Asn Asp Val
      65             70             75             80

Tyr Ala Gly Gln Pro Phe Ala Val Gln Asp Gly Ala Gly Ile Phe Ala
      85             90             95

Ala Ala Asp Lys Thr Phe Gly Asn Asp Phe Ala Xaa Glu Gly Val Ser
      100            105            110

Ile Leu Arg Lys Arg Phe Ser Asp Gly Leu Phe Leu
      115            120
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<210> 337

<211> 374

<212> DNA

<213> *Neisseria meningitidis*

<400> 337

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tttgaggaaa tcgacgcgca cgcagccttc cgcaccgatt gcctgcgcgc cgcgaaccgc 120
cagttcgcgc atcaggcttt cttcggcttc ggtcagatct tccgaaggac attgataaat 180
gggtgcgttg cggttgtact tggcttcgta gtcataaaac tcggtcgcgc ggatgatgtg 240
tatgccgggc aggcctttgc cgttcaacac agggcaggaa tattcgccgc cgccgataaa 300
ccgttcggca atgatttcgc cctgaaagtg tttcaattct tcgtaaacgc ttttcagacg 360
gccttttcct ttga 374
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<210> 338  
 <211> 124  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 338  
 Met Ala Gly His Thr Gly Gln Gly Val Asp Phe Gln Gln Ile Glu Phe  
 1 5 10 15  
 Ala Val Gly Ile Phe Glu Glu Ile Asp Ala His Ala Ala Phe Arg Thr  
 20 25 30  
 Asp Cys Leu Arg Ala Ala Asn Arg Gln Phe Ala His Gln Ala Phe Phe  
 35 40 45  
 Gly Phe Gly Gln Ile Phe Arg Arg Thr Leu Ile Asn Gly Val Val Ala  
 50 55 60  
 Val Val Leu Gly Phe Val Val Ile Lys Leu Gly Arg Gly Asp Asp Val  
 65 70 75 80  
 Tyr Ala Gly Gln Ala Phe Ala Val Gln His Arg Ala Gly Ile Phe Ala  
 85 90 95  
 Ala Ala Asp Lys Pro Phe Gly Asn Asp Phe Ala Xaa Glu Ser Val Ser  
 100 105 110  
 Ile Leu Arg Lys Arg Phe Ser Asp Gly Leu Phe Leu  
 115 120

<210> 339  
 <211> 1311  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 339  
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 acgggtacgta ccgagttgat ggcggggtttg acgacotttt tgacgatgtg ctacatcggt 120  
 atcgtcaatc ccctgatattt gggcgagacc ggaatggata tgggggcggt attcgtcgct 180  
 acctgtatcg catccgcatc cggctgtttt gtcattgggtt ttatcggtca ctatccgatt 240  
 gcgcttgccc cggggatggg gctgaatgcc tatttcacct ttgccgtcgt taagggtatg 300  
 ggcgtgcctt ggcaggtggc gttgggtgcg gtgttcattt ccggtctgat tttcatcctg 360  
 ttcagctttt ttaaagtcag ggaaatgctg gtcaacgcac tgcctatggg tttgaaaatg 420  
 tcgattgccg ccggtatcgg tttgtttttg gcaactgattt ccctgaaagg cgcaggcatt 480  
 atcgttgcca atccggcaac cttgggtcggc ttgggcgata ttcacagcc cagcgactg 540  
 ttggcattgt tcggttttgt catgggtggtc gtattggggg atttccgcgt tcaaggcgca 600  
 atcatcatca ccattctgac gattaccgtc attgccagcc tgatgggttt gaacgagttt 660  
 cacggcggtg tcggcgaaat accgggcatt gcgcccacct ttatgcagat ggatttttaa 720  
 ggtctgttta ccgtcagcat ggtcagcgtg attttcgtct tcttcttggt cgatttggtc 780  
 gacagtaccg gaacgctggt cggcgtatcc caccgtgccg gactgctggt ggacggtaag 840  
 ctgccccgcc tgaacgcgc actgcttgca gactctaccg ccattgtggc aggtgcgggt 900  
 ttgggtactt cttcaaccac gccttatgtg gaaagcgcg cgggcgatc ggcaggcgga 960  
 cggaccggcc tgacggcggt taccgtcggc gtattgatgc tggcgtgtct gatgttctcc 1020  
 ccattggcga aaagtgttcc ggtatttgcc accgcgcccc cactgcttta tgcggcacg 1080

cagatgctcc gcagtgcgag ggacattgat tgggacgata tgactgaagc cgcgcccgcg 1140  
 ttcctgacca ttgtcttcat gccgtttacc tattcgattg cagacggcat cgccttcggc 1200  
 ttcacagct atgccgtggt caaacttttg tgtcgccgga ctggggacgt gccgcctatg 1260  
 gtatggggtt ttgccgtatt gtgggcattg aaattctggt atttgggctg a 1311

<210> 340

<211> 436

<212> PRT

<213> Neisseria gonorrhoeae

<400> 340

Met Asp Ile Ser Lys Gln Thr Leu Leu Asp Arg Val Phe Asn Leu Lys  
 1 5 10 15

Ala Asn Gly Thr Thr Val Arg Thr Glu Leu Met Ala Gly Leu Thr Thr  
 20 25 30

Phe Leu Thr Met Cys Tyr Ile Val Ile Val Asn Pro Leu Ile Leu Gly  
 35 40 45

Glu Thr Gly Met Asp Met Gly Ala Val Phe Val Ala Thr Cys Ile Ala  
 50 55 60

Ser Ala Ile Gly Cys Phe Val Met Gly Phe Ile Gly Asn Tyr Pro Ile  
 65 70 75 80

Ala Leu Ala Pro Gly Met Gly Leu Asn Ala Tyr Phe Thr Phe Ala Val  
 85 90 95

Val Lys Gly Met Gly Val Pro Trp Gln Val Ala Leu Gly Ala Val Phe  
 100 105 110

Ile Ser Gly Leu Ile Phe Ile Leu Phe Ser Phe Phe Lys Val Arg Glu  
 115 120 125

Met Leu Val Asn Ala Leu Pro Met Gly Leu Lys Met Ser Ile Ala Ala  
 130 135 140

Gly Ile Gly Leu Phe Leu Ala Leu Ile Ser Leu Lys Gly Ala Gly Ile  
 145 150 155 160

Ile Val Ala Asn Pro Ala Thr Leu Val Gly Leu Gly Asp Ile His Gln  
 165 170 175

Pro Ser Ala Leu Leu Ala Leu Phe Gly Phe Val Met Val Val Val Leu  
 180 185 190

Gly Tyr Phe Arg Val Gln Gly Ala Ile Ile Ile Thr Ile Leu Thr Ile  
 195 200 205

Thr Val Ile Ala Ser Leu Met Gly Leu Asn Glu Phe His Gly Val Val  
 210 215 220

Gly Glu Val Pro Gly Ile Ala Pro Thr Phe Met Gln Met Asp Phe Lys  
 225 230 235 240





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atcatcatca ccattcttgac cattaccgtc attgccagcc tgatggggtt gaatgaattt 660
cacggcatca tcggcgaaat accgagcatt gcgccgactt ttatgcagat ggattttgaa 720
ggcctgttta ccgtcagcat ggtcagtgtg attttcgtct tcttcttggg cgatctatatt 780
gacagtaccg gaacgctggg cggcatatcc caccgtgccg ggctgctggg ggacggtaag 840
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cagatgctcc gcagtgcgag ggatattgat tgggacgata tgacggaagc cgcacctgcg 1140
ttcctgacca ttgttttcat gccgtttact tattcgattg cagacggcat cgctttcggc 1200
ttcatcagtt atgccgtggg taaactttta tgccgccgca ccaaagacgt tccgcctatg 1260
gtatggattg ttgccgtatt gtgggcactg aaattctggg atttgggctg a 1311

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<210> 342

<211> 436

<212> PRT

<213> Neisseria meningitidis

<400> 342

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Met Asp Thr Ser Lys Gln Thr Leu Leu Asp Gly Ile Phe Lys Leu Lys
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Ala Asn Gly Thr Thr Val Arg Thr Glu Leu Met Ala Gly Leu Thr Thr
      20           25           30

Phe Leu Thr Met Cys Tyr Ile Val Ile Val Asn Pro Xaa Ile Leu Gly
      35           40           45

Glu Thr Gly Met Asp Met Gly Ala Val Phe Val Ala Thr Cys Ile Ala
      50           55           60

Ser Ala Ile Gly Cys Phe Val Met Gly Phe Val Gly Asn Tyr Pro Ile
      65           70           75           80

Ala Leu Ala Pro Gly Met Gly Leu Asn Ala Tyr Phe Thr Phe Ala Val
      85           90           95

Val Lys Gly Met Gly Val Pro Trp Gln Val Ala Leu Gly Ala Val Phe
      100          105          110

Ile Ser Gly Leu Ile Phe Ile Leu Phe Ser Phe Phe Lys Val Arg Glu
      115          120          125

Met Leu Val Asn Ala Leu Pro Met Gly Leu Lys Met Ser Ile Ala Ala
      130          135          140

Gly Ile Gly Leu Phe Leu Ala Leu Ile Ser Leu Lys Gly Ala Gly Ile
      145          150          155          160

Ile Val Ala Asn Pro Ala Thr Leu Val Gly Leu Gly Asp Ile His Gln
      165          170          175

Pro Ser Ala Leu Leu Ala Leu Phe Gly Phe Ala Met Val Val Val Leu
      180          185          190

Gly His Phe Arg Val Gln Gly Ala Ile Ile Ile Thr Ile Leu Thr Ile

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195	200	205
Thr Val Ile Ala Ser Leu Met Gly Leu Asn Glu Phe His Gly Ile Ile 210 215 220		
Gly Glu Val Pro Ser Ile Ala Pro Thr Phe Met Gln Met Asp Phe Glu 225 230 235 240		
Gly Leu Phe Thr Val Ser Met Val Ser Val Ile Phe Val Phe Phe Leu 245 250 255		
Val Asp Leu Phe Asp Ser Thr Gly Thr Leu Val Gly Ile Ser His Arg 260 265 270		
Ala Gly Leu Leu Val Asp Gly Lys Leu Pro Arg Leu Lys Arg Ala Leu 275 280 285		
Leu Ala Asp Ser Thr Ala Ile Val Ala Gly Ala Ala Leu Gly Thr Ser 290 295 300		
Ser Thr Thr Pro Tyr Val Glu Ser Ala Ala Gly Val Ser Ala Gly Gly 305 310 315 320		
Arg Thr Gly Leu Thr Ala Val Thr Val Gly Val Leu Met Leu Ala Cys 325 330 335		
Leu Met Phe Ser Pro Leu Ala Lys Ser Val Pro Ala Phe Ala Thr Ala 340 345 350		
Pro Ala Leu Leu Tyr Val Gly Thr Gln Met Leu Arg Ser Ala Arg Asp 355 360 365		
Ile Asp Trp Asp Asp Met Thr Glu Ala Ala Pro Ala Phe Leu Thr Ile 370 375 380		
Val Phe Met Pro Phe Thr Tyr Ser Ile Ala Asp Gly Ile Ala Phe Gly 385 390 395 400		
Phe Ile Ser Tyr Ala Val Val Lys Leu Leu Cys Arg Arg Thr Lys Asp 405 410 415		
Val Pro Pro Met Val Trp Ile Val Ala Val Leu Trp Ala Leu Lys Phe 420 425 430		
Trp Tyr Leu Gly 435		

<210> 343  
 <211> 1311  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 343  
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 atcgtcaacc ctctgatttt gggcgagacc ggcattggata tgggggagggt attcgtcgct 180

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acctgtatcg cgtctgccat cggctgtttt gttatgggtt ttgtcggcaa ctatccgatt 240
gcactcgcac cggggatggg gctgaatgcc tatttcacct ttgccgtcgt taagggtatg 300
ggcgtgcctt ggcaggttgc gttgggtgcg gtgttcatct ccggtctgat tttcatcctg 360
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cacggcatca tcggcgaagt gccgagcatt gcgccgactt ttatgcagat ggattttaaa 720
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gacagtaccg gaacactggt cgggtgtatcg catcgtgccg gactgctggt ggacggtaag 840
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<210> 344

<211> 436

<212> PRT

<213> *Neisseria meningitidis*

<400> 344

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Met Asp Thr Ser Lys Gln Thr Leu Leu Asp Gly Ile Phe Lys Leu Lys
  1             5             10             15

Ala Asn Gly Thr Thr Val Arg Thr Glu Leu Met Ala Gly Leu Thr Thr
  20             25             30

Phe Leu Thr Met Cys Tyr Ile Val Ile Val Asn Pro Leu Ile Leu Gly
  35             40             45

Glu Thr Gly Met Asp Met Gly Ala Val Phe Val Ala Thr Cys Ile Ala
  50             55             60

Ser Ala Ile Gly Cys Phe Val Met Gly Phe Val Gly Asn Tyr Pro Ile
  65             70             75             80

Ala Leu Ala Pro Gly Met Gly Leu Asn Ala Tyr Phe Thr Phe Ala Val
  85             90             95

Val Lys Gly Met Gly Val Pro Trp Gln Val Ala Leu Gly Ala Val Phe
 100             105             110

Ile Ser Gly Leu Ile Phe Ile Leu Phe Ser Phe Phe Lys Val Arg Glu
 115             120             125

Met Leu Val Asn Ala Leu Pro Met Gly Leu Lys Met Ser Ile Ala Ala
 130             135             140             145

Gly Ile Gly Leu Phe Leu Ala Leu Ile Ser Leu Lys Gly Ala Gly Ile
 145             150             155             160

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Ile	Val	Ala	Asn	Pro	Ala	Thr	Leu	Val	Gly	Leu	Gly	Asp	Ile	His	Gln	
				165					170					175		
Pro	Ser	Ala	Leu	Leu	Ala	Leu	Phe	Gly	Phe	Ala	Met	Val	Val	Val	Leu	
			180					185					190			
Gly	His	Phe	Arg	Val	Gln	Gly	Ala	Ile	Ile	Ile	Thr	Ile	Leu	Thr	Ile	
		195					200					205				
Thr	Val	Ile	Ala	Ser	Leu	Met	Gly	Leu	Asn	Glu	Phe	His	Gly	Ile	Ile	
	210					215					220					
Gly	Glu	Val	Pro	Ser	Ile	Ala	Pro	Thr	Phe	Met	Gln	Met	Asp	Phe	Lys	
225					230					235					240	
Gly	Leu	Phe	Thr	Val	Ser	Met	Val	Ser	Val	Ile	Phe	Val	Phe	Phe	Leu	
				245					250					255		
Val	Asp	Leu	Phe	Asp	Ser	Thr	Gly	Thr	Leu	Val	Gly	Val	Ser	His	Arg	
		260						265					270			
Ala	Gly	Leu	Leu	Val	Asp	Gly	Lys	Leu	Pro	Arg	Leu	Lys	Arg	Ala	Leu	
		275					280					285				
Leu	Ala	Asp	Ser	Thr	Ala	Ile	Val	Ala	Gly	Ala	Ala	Leu	Gly	Thr	Ser	
	290					295					300					
Ser	Thr	Thr	Pro	Tyr	Val	Glu	Ser	Ala	Ala	Gly	Val	Ser	Ala	Gly	Gly	
305					310					315				320		
Arg	Thr	Gly	Leu	Thr	Ala	Val	Thr	Val	Gly	Val	Leu	Met	Leu	Ala	Cys	
				325					330					335		
Leu	Met	Phe	Ser	Pro	Leu	Ala	Lys	Ser	Val	Pro	Ala	Phe	Ala	Thr	Ala	
			340					345					350			
Pro	Ala	Leu	Leu	Tyr	Val	Gly	Thr	Gln	Met	Leu	Arg	Ser	Ala	Arg	Asp	
		355					360					365				
Ile	Asp	Trp	Asp	Asp	Met	Thr	Glu	Ala	Ala	Pro	Ala	Phe	Leu	Thr	Ile	
	370					375					380					
Val	Phe	Met	Pro	Phe	Thr	Tyr	Ser	Ile	Ala	Asp	Gly	Ile	Ala	Phe	Gly	
385					390					395				400		
Phe	Ile	Ser	Tyr	Ala	Val	Val	Lys	Leu	Leu	Cys	Arg	Arg	Thr	Lys	Asp	
				405				410					415			
Val	Pro	Pro	Met	Val	Trp	Ile	Val	Ala	Val	Leu	Trp	Ala	Leu	Lys	Phe	
			420					425					430			
Trp	Tyr	Leu	Gly													
		435														

<210> 345

<211> 378

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 345

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ttgataccag tacagcagga tgctgccag gctggcgatc agtttgtcgg cgatgtcgcg 120
cgcttcgctg tcgggatggc ttctcgcttc gggatgaacg cagccgagca tggacacgcc 180
ggtacgcatt acgtccatcg gatgggtatg tgcaggcagg ctttccaaaa ctttaatcac 240
acggataggc aggccgcgca tggatttgag cttggtttta taagcggcca gctcgaattt 300
gttgggcaga tggccgtgaa tcagcaagtg tgcgacttct tcaaactcgc atttttgtgc 360
caaattagaa tgtcgtaa                                     378
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<210> 346

<211> 125

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 346

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  1           5           10          15

Val Val Arg Ile Leu Ile Pro Val Gln Gln Asp Ala Ala Gln Ala Gly
          20          25          30

Asp Gln Phe Val Gly Asp Val Ala Arg Phe Ala Val Gly Met Ala Phe
          35          40          45

Ala Phe Gly Met Asn Ala Ala Glu His Gly His Ala Gly Thr His His
          50          55          60

Val His Arg Met Gly Met Cys Arg Gln Ala Phe Gln Asn Phe Asn His
          65          70          75          80

Thr Asp Arg Gln Ala Ala His Gly Phe Glu Leu Gly Phe Ile Ser Gly
          85          90          95

Gln Leu Glu Phe Val Gly Gln Met Ala Val Asn Gln Gln Val Cys Asp
          100         105         110

Phe Phe Lys Leu Ala Phe Leu Cys Gln Ile Arg Met Ser
          115         120         125
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<210> 347

<211> 378

<212> DNA

<213> *Neisseria meningitidis*

<400> 347

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cgcttcactt tccggatggc ttctacgttc aggatgaacg cagcccagca tggatacgcc 180
ggtacgcatt acgtccatcg gatgggtatg tgcaggcagg ctttccaaaa ctttaatcac 240
acggataggc aggccgcgca tggatttgag cttggtttta taagcggcca gctcgaattt 300
gttgggcaga tggccgtgaa tcagcaggtg ggcgacttct tcaaactcgc atttttgtgc 360
caaatcagaa tgtcgtaa                                     378
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<210> 348  
 <211> 125  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 348  
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                   20                  25                  30  
 Asp Gln Phe Val Gly Asp Val Ala Arg Phe Thr Phe Arg Met Ala Phe  
                   35                  40                  45  
 Thr Phe Arg Met Asn Ala Ala Gln His Gly Tyr Ala Gly Thr His Tyr  
                   50                  55                  60  
 Val His Arg Met Gly Met Cys Arg Gln Ala Phe Gln Asn Phe Asn His  
   65                  70                  75                  80  
 Thr Asp Arg Gln Ala Ala His Gly Phe Glu Leu Gly Phe Ile Ser Gly  
                   85                  90                  95  
 Gln Leu Glu Phe Val Gly Gln Met Ala Val Asn Gln Gln Val Gly Asp  
                   100                  105                  110  
 Phe Phe Lys Leu Ala Phe Leu Cys Gln Ile Arg Met Ser  
                   115                  120                  125

<210> 349  
 <211> 378  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 349  
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 ttgataccag tacaagagga tgctgccgag gctggcgatc agtttgtcgg cgatgtcgcg 120  
 cgcttcactt tccggatggc tttcacgttc aggatgaacg cagcccagca tggatacgcc 180  
 ggtaacgatt acgtccatcg gatgggtatg tgcaggcagg ctttccaaaa cttaatacac 240  
 acggataggc aggccgcgca tggatttgag cttggtttta taagcggcca gtcgaattt 300  
 gttgggcaga tggccgtgaa tcagcaggtg ggcgacttct tcaaactcgc atttttgtgc 360  
 caaatcagaa tgcgtaa 378

<210> 350  
 <211> 125  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 350  
 Met Thr Ala Asp Gly Leu Phe Val Ala Phe Asn Leu Asn Ala Phe Ala  
   1                  5                  10                  15

Val Val Arg Ile Leu Ile Pro Val Gln Glu Asp Ala Ala Glu Ala Gly  
                   20                                  25                                  30  
 Asp Gln Phe Val Gly Asp Val Ala Arg Phe Thr Phe Arg Met Ala Phe  
                   35                                  40                                  45  
 Thr Phe Arg Met Asn Ala Ala Gln His Gly Tyr Ala Gly Thr His Tyr  
                   50                                  55                                  60  
 Val His Arg Met Gly Met Cys Arg Gln Ala Phe Gln Asn Phe Asn His  
                   65                                  70                                  75                                  80  
 Thr Asp Arg Gln Ala Ala His Gly Phe Glu Leu Gly Phe Ile Ser Gly  
                                   85                                  90                                  95  
 Gln Leu Glu Phe Val Gly Gln Met Ala Val Asn Gln Gln Val Gly Asp  
                                   100                                  105                                  110  
 Phe Phe Lys Leu Ala Phe Leu Cys Gln Ile Arg Met Ser  
                   115                                  120                                  125

<210> 351  
 <211> 1920  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 351  
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 aaagagcgcg tggtcggggc gtttgtcgaa tttttcggcg agggcgcgag aagcctgtct 180  
 atcggcgacc ggcgaccat ttccaacatg acgcccggagt tcggcgcgac tgccgccatg 240  
 ttccgcatcg acgcgcaaac tattgattat ttgaaactga ccggacgtga cgacgcgcag 300  
 gtgaaattgg tggaaacctc cgccaaaacc gcaggcttat gggcaggtgg cttgaaaacc 360  
 gccgtttatc cgcgcgtttt gaaatttgat ttgagcagcg taacgcgcaa tatggcaggc 420  
 ccgagcaacc cgcacgcgcg ttttgccacc gccgatttgg cggcgaaagg gctggcgaag 480  
 ccttacgaag agccttcaga cggccaaatg cctgacgggtg cagtgtattat tgccgcgatt 540  
 acttcgtgta ccaatacttc caaccgcgc aacgttgtcg ccgccgcaact gttggcacgc 600  
 aatgcccaacc gcctcggtt gaaacgcaaa ccttgggtga aatcttogtt tgcccgggt 660  
 tcaaaagtag ccggaatcta tttgaaagaa gcaggcttgt tgcccgaaat ggaaaaaactc 720  
 ggcttcggta tcgtgcctt cgcgtgtacc acctgtaacg gcatgagcgg cgcgctcgac 780  
 ccgaaaatcc aacaagaaat catcgaccgc gatttgtacg ccaccgccgt attgtcaggc 840  
 aaccgcaact tcgacggccg tatccatccg tatgcgaaac aggttttctt cgcttcgcct 900  
 cctttggtcg ttgcctacgc attggcaggc agcatccgtt tcgatattga aaacgacgta 960  
 ctccggcgtt cagacggccg cgaaatccgc ctgaaagata tctggccgac agacgaagaa 1020  
 atcgatgcc a tcgttgccga atatgtgaaa ccgcaacaat tccgcgacat ttatatcccg 1080  
 atgtccgaca ccggcacagc gcaaaaagca ccaagcccgc tgtacgactg gcgaccgatg 1140  
 tccacctaca tccgccgtcc gccctattgg gaaggcgcac tggcagggga acgtacatta 1200  
 agaggtatgc gtcgcgcggc gattttgccc gacaacatca ccaccgacca catctcgcca 1260  
 tccaatgcga tttggccggc cagtgcgcga ggtgaatatt tggcgaaaat gggtttgctt 1320  
 gaagaagact tcaactctta cgcaaccac cgccggcgacc acttgaccgc ccaacgcgca 1380  
 accttcgcca atccgaaact gtttaacgaa atggtgagaa acgaagacgg cagcgtacgc 1440  
 caaggttcgt tggcacgcgt tgaaccagaa ggccaaacca tgcgcatgtg ggaagccatc 1500  
 gaaacctata tgaaccgcaa acagccgctt atcatcattg ccggtgcgga ctatggtcaa 1560  
 ggctcaagcc gcgactgggc ggcgaaaggc gtgcggctgg cgggtgtgga agccatcgcc 1620  
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 caattcaaac ccggcaccaa ccgccatacc ctgcaactgg acggtacgga aacctacgac 1740

gttgctggcg aacgcacacc gcgctgcggc ctgaccctcg tgattcaccg taaaaacgga 1800  
gaaaccgtcg aagttccggt tacctgccgc cccgataccg cagaagaagc attggtatat 1860  
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<210> 352

<211> 639

<212> PRT

<213> Neisseria gonorrhoeae

<400> 352

Met Leu Gly Arg Ala Ser Met Met Arg Leu Pro Asp Ile Val Gly Val  
1 5 10 15

Glu Leu Thr Gly Lys Arg Gln Ala Gly Ile Thr Ala Thr Asp Ile Val  
20 25 30

Leu Ala Leu Thr Glu Phe Leu Arg Lys Glu Arg Val Val Gly Ala Phe  
35 40 45

Val Glu Phe Phe Gly Glu Gly Ala Arg Ser Leu Ser Ile Gly Asp Arg  
50 55 60

Ala Thr Ile Ser Asn Met Thr Pro Glu Phe Gly Ala Thr Ala Ala Met  
65 70 75 80

Phe Ala Ile Asp Ala Gln Thr Ile Asp Tyr Leu Lys Leu Thr Gly Arg  
85 90 95

Asp Asp Ala Gln Val Lys Leu Val Glu Thr Tyr Ala Lys Thr Ala Gly  
100 105 110

Leu Trp Ala Gly Gly Leu Lys Thr Ala Val Tyr Pro Arg Val Leu Lys  
115 120 125

Phe Asp Leu Ser Ser Val Thr Arg Asn Met Ala Gly Pro Ser Asn Pro  
130 135 140

His Ala Arg Phe Ala Thr Ala Asp Leu Ala Ala Lys Gly Leu Ala Lys  
145 150 155 160

Pro Tyr Glu Glu Pro Ser Asp Gly Gln Met Pro Asp Gly Ala Val Ile  
165 170 175

Ile Ala Ala Ile Thr Ser Cys Thr Asn Thr Ser Asn Pro Arg Asn Val  
180 185 190

Val Ala Ala Ala Leu Leu Ala Arg Asn Ala Asn Arg Leu Gly Leu Lys  
195 200 205

Arg Lys Pro Trp Val Lys Ser Ser Phe Ala Pro Gly Ser Lys Val Ala  
210 215 220

Gly Ile Tyr Leu Lys Glu Ala Gly Leu Leu Pro Glu Met Glu Lys Leu  
225 230 235 240

Gly Phe Gly Ile Val Ala Phe Ala Cys Thr Thr Cys Asn Gly Met Ser



245

250

255

Gly Ala Leu Asp Pro Lys Ile Gln Gln Glu Ile Ile Asp Arg Asp Leu  
260 265 270

Tyr Ala Thr Ala Val Leu Ser Gly Asn Arg Asn Phe Asp Gly Arg Ile  
275 280 285

His Pro Tyr Ala Lys Gln Ala Phe Leu Ala Ser Pro Pro Leu Val Val  
290 295 300

Ala Tyr Ala Leu Ala Gly Ser Ile Arg Phe Asp Ile Glu Asn Asp Val  
305 310 315 320

Leu Gly Val Ala Asp Gly Arg Glu Ile Arg Leu Lys Asp Ile Trp Pro  
325 330 335

Thr Asp Glu Glu Ile Asp Ala Ile Val Ala Glu Tyr Val Lys Pro Gln  
340 345 350

Gln Phe Arg Asp Ile Tyr Ile Pro Met Ser Asp Thr Gly Thr Ala Gln  
355 360 365

Lys Ala Pro Ser Pro Leu Tyr Asp Trp Arg Pro Met Ser Thr Tyr Ile  
370 375 380

Arg Arg Pro Pro Tyr Trp Glu Gly Ala Leu Ala Gly Glu Arg Thr Leu  
385 390 395 400

Arg Gly Met Arg Pro Pro Ala Ile Leu Pro Asp Asn Ile Thr Thr Asp  
405 410 415

His Ile Ser Pro Ser Asn Ala Ile Leu Ala Gly Ser Ala Ala Gly Glu  
420 425 430

Tyr Leu Ala Lys Met Gly Leu Pro Glu Glu Asp Phe Asn Ser Tyr Ala  
435 440 445

Thr His Arg Gly Asp His Leu Thr Ala Gln Arg Ala Thr Phe Ala Asn  
450 455 460

Pro Lys Leu Phe Asn Glu Met Val Arg Asn Glu Asp Gly Ser Val Arg  
465 470 475 480

Gln Gly Ser Leu Ala Arg Val Glu Pro Glu Gly Gln Thr Met Arg Met  
485 490 495

Trp Glu Ala Ile Glu Thr Tyr Met Asn Arg Lys Gln Pro Leu Ile Ile  
500 505 510

Ile Ala Gly Ala Asp Tyr Gly Gln Gly Ser Ser Arg Asp Trp Ala Ala  
515 520 525

Lys Gly Val Arg Leu Ala Gly Val Glu Ala Ile Ala Ala Glu Gly Phe  
530 535 540

Glu Arg Ile His Arg Thr Asn Leu Ile Gly Met Gly Val Leu Pro Leu

545											550											555											560
Gln	Phe	Lys	Pro	Gly	Thr	Asn	Arg	His	Thr	Leu	Gln	Leu	Asp	Gly	Thr																		
				565					570					575																			
Glu	Thr	Tyr	Asp	Val	Val	Gly	Glu	Arg	Thr	Pro	Arg	Cys	Gly	Leu	Thr																		
				580					585					590																			
Leu	Val	Ile	His	Arg	Lys	Asn	Gly	Glu	Thr	Val	Glu	Val	Pro	Val	Thr																		
				595					600					605																			
Cys	Arg	Pro	Asp	Thr	Ala	Glu	Glu	Ala	Leu	Val	Tyr	Glu	Ala	Gly	Gly																		
				610					615					620																			
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625					630					635																							

<400> 353

<210> 354  
<211> 639  
<212> PRT  
<213> Neisseria meningitidis

<400> 354  
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1 5 10 15  
Glu Leu Asn Gly Lys Arg Gln Ala Gly Ile Thr Ala Thr Asp Ile Val  
20 25 30  
Leu Ala Leu Thr Glu Phe Leu Arg Lys Glu Arg Val Val Gly Ala Phe  
35 40 45  
Val Glu Phe Phe Gly Glu Gly Ala Arg Ser Leu Ser Ile Gly Asp Arg  
50 55 60  
Ala Thr Ile Ser Asn Met Thr Pro Glu Phe Gly Ala Thr Ala Ala Met  
65 70 75 80  
Phe Ala Ile Asp Glu Gln Thr Ile Asp Tyr Leu Lys Leu Thr Gly Arg  
85 90 95  
Asp Asp Ala Gln Val Lys Leu Val Glu Thr Tyr Ala Lys Thr Ala Gly  
100 105 110  
Leu Trp Ala Asp Ala Leu Lys Thr Ala Val Tyr Pro Arg Val Leu Lys  
115 120 125  
Phe Asp Leu Ser Ser Val Thr Arg Asn Met Ala Gly Pro Ser Asn Pro  
130 135 140  
His Ala Arg Phe Ala Thr Ala Asp Leu Ala Ala Lys Gly Leu Ala Lys  
145 150 155 160  
Pro Tyr Glu Glu Pro Ser Asp Gly Gln Met Pro Asp Gly Ser Val Ile  
165 170 175  
Ile Ala Ala Ile Thr Ser Cys Thr Asn Thr Ser Asn Pro Arg Asn Val  
180 185 190  
Val Ala Ala Ala Leu Leu Ala Arg Asn Ala Asn Arg Leu Gly Leu Lys  
195 200 205  
Arg Lys Pro Trp Val Lys Ser Ser Phe Ala Pro Gly Ser Lys Val Ala  
210 215 220  
Glu Ile Tyr Leu Lys Glu Ala Gly Leu Leu Pro Glu Met Glu Lys Leu  
225 230 235 240  
Gly Phe Gly Ile Val Ala Phe Ala Cys Thr Thr Cys Asn Gly Met Ser  
245 250 255  
Gly Ala Leu Asp Pro Lys Ile Gln Lys Glu Ile Ile Asp Arg Asp Leu

260	265	270
Tyr Ala Thr Ala Val Leu Ser Gly Asn Arg Asn Phe Asp Gly Arg Ile 275 280 285		
His Pro Tyr Ala Lys Gln Ala Phe Leu Ala Ser Pro Pro Leu Val Val 290 295 300		
Ala Tyr Ala Leu Ala Gly Ser Ile Arg Phe Asp Ile Glu Asn Asp Val 305 310 315 320		
Leu Gly Val Ala Asp Gly Lys Glu Ile Arg Leu Lys Asp Ile Trp Pro 325 330 335		
Ala Asp Glu Glu Ile Asp Ala Val Val Ala Glu Tyr Val Lys Pro Gln 340 345 350		
Gln Phe Arg Asp Val Tyr Val Pro Met Phe Asp Thr Gly Thr Ala Gln 355 360 365		
Lys Ala Pro Ser Pro Leu Tyr Asp Trp Arg Pro Met Ser Thr Tyr Ile 370 375 380		
Arg Arg Pro Pro Tyr Trp Glu Gly Ala Leu Ala Gly Glu Arg Thr Leu 385 390 395 400		
Arg Gly Met Arg Pro Leu Ala Ile Leu Pro Asp Asn Ile Thr Thr Asp 405 410 415		
His Leu Ser Pro Ser Asn Ala Ile Leu Ala Val Ser Ala Ala Gly Glu 420 425 430		
Tyr Leu Ala Lys Met Gly Leu Pro Glu Glu Asp Phe Asn Ser Tyr Ala 435 440 445		
Thr His Arg Gly Asp His Leu Thr Ala Gln Arg Ala Thr Phe Ala Asn 450 455 460		
Pro Lys Leu Phe Asn Glu Met Val Lys Asn Glu Asp Gly Ser Val Arg 465 470 475 480		
Gln Gly Ser Phe Ala Arg Val Glu Pro Glu Gly Glu Thr Met Arg Met 485 490 495		
Trp Glu Ala Ile Glu Thr Tyr Met Asn Arg Lys Gln Pro Leu Ile Ile 500 505 510		
Ile Ala Gly Ala Asp Tyr Gly Gln Gly Ser Ser Arg Asp Trp Ala Ala 515 520 525		
Lys Gly Val Arg Leu Ala Gly Val Glu Ala Ile Val Ala Glu Gly Phe 530 535 540		
Glu Arg Ile His Arg Thr Asn Leu Ile Gly Met Gly Val Leu Pro Leu 545 550 555 560		

Gln Phe Lys Pro Asp Thr Asn Arg His Thr Leu Gln Leu Asp Gly Thr  
565 570 575

Glu Thr Tyr Asp Val Val Gly Glu Arg Thr Pro Arg Cys Asp Leu Thr  
580 585 590

Leu Val Ile His Arg Lys Asn Gly Glu Thr Val Glu Val Pro Val Thr  
595 600 605

Cys Cys Leu Asp Thr Ala Glu Glu Val Leu Val Tyr Glu Ala Gly Gly  
610 615 620

Val Leu Gln Arg Phe Ala Gln Asp Phe Leu Glu Gly Asn Ala Ala  
625 630 635

<210> 355

<211> 1920

<212> DNA

<213> Neisseria meningitidis

<400> 355

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aaagaacgcg tggtcggggc gtttgtcgaa ttcttcggcg agggcgcgag aagcctgtct 180
atcggcgacc ggcgacccat ttccaacatg acgcccggag tcggcgcgac tgccgcgatg 240
ttcgctattg atgagcaaac cattgattat ttgaaactga ccggacgcga cgacgcgcag 300
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gaagccggtg gcgtattgca acggtttgca caggattttt tggaagggaa cgcggcttag 1920
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<210> 356

<211> 639  
<212> PRT  
<213> Neisseria meningitidis

<400> 356

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35 40 45  
Val Glu Phe Phe Gly Glu Gly Ala Arg Ser Leu Ser Ile Gly Asp Arg  
50 55 60  
Ala Thr Ile Ser Asn Met Thr Pro Glu Phe Gly Ala Thr Ala Ala Met  
65 70 75 80  
Phe Ala Ile Asp Glu Gln Thr Ile Asp Tyr Leu Lys Leu Thr Gly Arg  
85 90 95  
Asp Asp Ala Gln Val Lys Leu Val Glu Thr Tyr Ala Lys Thr Ala Gly  
100 105 110  
Leu Trp Ala Asp Ala Leu Lys Thr Ala Val Tyr Pro Arg Val Leu Lys  
115 120 125  
Phe Asp Leu Ser Ser Val Thr Arg Asn Met Ala Gly Pro Ser Asn Pro  
130 135 140  
His Ala Arg Phe Ala Thr Ala Asp Leu Ala Gly Lys Gly Leu Ala Lys  
145 150 155 160  
Pro Tyr Glu Glu Pro Ser Asp Gly Gln Met Pro Asp Gly Ala Val Ile  
165 170 175  
Ile Ala Ala Ile Thr Ser Cys Thr Asn Thr Ser Asn Pro Arg Asn Val  
180 185 190  
Val Ala Ala Ala Leu Leu Ala Arg Asn Ala Asn Arg Leu Gly Leu Gln  
195 200 205  
Arg Lys Pro Trp Val Lys Ser Ser Phe Ala Pro Gly Ser Lys Val Ala  
210 215 220  
Glu Ile Tyr Leu Lys Glu Ala Asp Leu Leu Pro Glu Met Glu Lys Leu  
225 230 235 240  
Gly Phe Gly Ile Val Ala Phe Ala Cys Thr Thr Cys Asn Gly Met Ser  
245 250 255  
Gly Ala Leu Asp Pro Lys Ile Gln Lys Glu Ile Ile Asp Arg Asp Leu  
260 265 270  
Tyr Ala Thr Ala Val Leu Ser Gly Asn Arg Asn Phe Asp Gly Arg Ile

275	280	285
His Pro Tyr Ala Lys Gln Ala Phe Leu Ala Ser Pro Pro Leu Val Val 290 295 300		
Ala Tyr Ala Leu Ala Gly Ser Ile Arg Phe Asp Ile Glu Asn Asp Val 305 310 315 320		
Leu Gly Val Ala Asp Gly Lys Glu Ile Arg Leu Lys Asp Ile Trp Pro 325 330 335		
Thr Asp Glu Glu Ile Asp Ala Ile Val Ala Glu Tyr Val Lys Pro Gln 340 345 350		
Gln Phe Arg Asp Val Tyr Ile Pro Met Phe Asp Thr Gly Thr Ala Gln 355 360 365		
Lys Ala Pro Ser Pro Leu Tyr Asp Trp Arg Pro Met Ser Thr Tyr Ile 370 375 380		
Arg Arg Pro Pro Tyr Trp Glu Gly Ala Leu Ala Gly Glu Arg Thr Leu 385 390 395 400		
Ser Gly Met Arg Pro Leu Ala Ile Leu Pro Asp Asn Ile Thr Thr Asp 405 410 415		
His Leu Ser Pro Ser Asn Ala Ile Leu Ala Ser Ser Ala Ala Gly Glu 420 425 430		
Tyr Leu Ala Lys Met Gly Leu Pro Glu Glu Asp Phe Asn Ser Tyr Ala 435 440 445		
Thr His Arg Gly Asp His Leu Thr Ala Gln Arg Ala Thr Phe Ala Asn 450 455 460		
Pro Lys Leu Phe Asn Glu Met Val Arg Asn Glu Asp Gly Ser Val Arg 465 470 475 480		
Gln Gly Ser Leu Ala Arg Val Glu Pro Glu Gly Gln Thr Met Arg Met 485 490 495		
Trp Glu Ala Ile Glu Thr Tyr Met Asn Arg Lys Gln Pro Leu Ile Ile 500 505 510		
Ile Ala Gly Ala Asp Tyr Gly Gln Gly Ser Ser Arg Asp Trp Ala Ala 515 520 525		
Lys Gly Val Arg Leu Ala Gly Val Glu Ala Ile Val Ala Glu Gly Phe 530 535 540		
Glu Arg Ile His Arg Thr Asn Leu Ile Gly Met Gly Val Leu Pro Leu 545 550 555 560		
Gln Phe Lys Pro Gly Thr Asn Arg His Thr Leu Gln Leu Asp Gly Thr 565 570 575		
Glu Thr Tyr Asp Val Val Gly Glu Arg Thr Pro Arg Cys Asp Leu Thr		

580

585

590

Leu Val Ile His Arg Lys Asn Gly Glu Thr Val Glu Val Pro Ile Thr  
 595 600 605

Cys Arg Leu Asp Thr Ala Glu Glu Val Leu Val Tyr Glu Ala Gly Gly  
 610 615 620

Val Leu Gln Arg Phe Ala Gln Asp Phe Leu Glu Gly Asn Ala Ala  
 625 630 635

&lt;210&gt; 357

&lt;211&gt; 1245

&lt;212&gt; DNA

&lt;213&gt; Neisseria gonorrhoeae

&lt;400&gt; 357

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 attgtgctgc tgtacacctg gtttccattc tcctccggcg cctcatgat tttggaagtc 180  
 aacacccata acccccagg ggcaagtgtt gacacatgg tcaaagacct gtcgggacgc 240  
 ggctggaaca tcatcaacgg catcgccgtc gctttggtcc tatacggctc gacctacgcg 300  
 tacatttttag tcggcgggtga cctgaccgcc aaaggcatcg gcagcgagcagg aggcggcaaa 360  
 atttcgctca ccgtcggaca actcgtcttc ttcggcatcc tcgccttttg cgtatgggca 420  
 tccgcacgct tggtcgaccg ctttaccggc gtccctcatcg gcggcatggt attaaccttt 480  
 atttgggcaa ccggcggcct ggttgccgat gccaaaccgt ccgtcctctt cgacacccaa 540  
 gcccccgtcg gcaccggcta ctggatttac gccgccaccg ccctgcccgt ctgcctcgct 600  
 tccttcgggt tccacggcaa cgtttccagc ctgctcaaact actttaaaagg cgacgcgccc 660  
 aaagtggcga aatccatctg ggcaggtaca ttggttgcc tggtaattta cgtcctctgg 720  
 caaaccgcca tccaaagcaa cctgccgcgc aacgagttcg ccccgatgat tgccgcccag 780  
 aggcaactct ccgtcctgaa tgaaaccctg tccaaattcg cccaaaccgg cgatatggat 840  
 aaaatattgt ccctatttcc ctacatggca atcgccacct cctttttagg cgtaacctta 900  
 ggctgttttg acaacatcgc cgacatcttc aaatggaacg acagtatgtc cggcgggggc 960  
 accaaaaccg tcgcgtgaa cttcctgccc cccctgattt cctggctgct cctccccacc 1020  
 ggcttcttta ccgccattgg tgcgtccggc ctggcgccaa ccgtctggga ccaaggcatc 1080  
 atccccgcca tgctgctcta cgtttcccc caaaaaattg gcgcaggcaa gacttataaa 1140  
 gtttacggcg gcttggtggt gatgttagtc ttccttttcg gcacgcgcaa catcgccgca 1200  
 cagggtattga gccaaatgga actcgtcccc gtatttaaag gataa 1245

&lt;210&gt; 358

&lt;211&gt; 414

&lt;212&gt; PRT

&lt;213&gt; Neisseria gonorrhoeae

&lt;400&gt; 358

Met Ser Ala Lys Thr Pro Ser Leu Phe Gly Gly Ala Met Ile Ile Ala  
 1 5 10 15

Gly Lys Val Ile Gly Ala Gly Met Phe Pro Asn Pro Thr Ala Asn Leu  
 20 25 30

Gly Asp Gly Leu Ile Gly Ser Leu Ile Val Leu Leu Tyr Thr Trp Phe  
 35 40 45

Pro Phe Ser Ser Gly Ala Leu Met Ile Leu Glu Val Asn Thr His Asn



50	55	60
Pro Arg Gly Ala Ser Phe Asp Thr Met Val Lys Asp Leu Leu Gly Arg 65 70 75 80		
Gly Trp Asn Ile Ile Asn Gly Ile Ala Val Ala Leu Val Leu Tyr Gly 85 90 95		
Ser Thr Tyr Ala Tyr Ile Leu Val Gly Gly Asp Leu Thr Ala Lys Gly 100 105 110		
Ile Gly Ser Ala Val Gly Gly Lys Ile Ser Leu Thr Val Gly Gln Leu 115 120 125		
Val Phe Phe Gly Ile Leu Ala Phe Cys Val Trp Ala Ser Ala Arg Leu 130 135 140		
Val Asp Arg Phe Thr Gly Val Leu Ile Gly Gly Met Val Leu Thr Phe 145 150 155 160		
Ile Trp Ala Thr Gly Gly Leu Val Ala Asp Ala Lys Pro Ser Val Leu 165 170 175		
Phe Asp Thr Gln Ala Pro Val Gly Thr Gly Tyr Trp Ile Tyr Ala Ala 180 185 190		
Thr Ala Leu Pro Val Cys Leu Ala Ser Phe Gly Phe His Gly Asn Val 195 200 205		
Ser Ser Leu Leu Lys Tyr Phe Lys Gly Asp Ala Pro Lys Val Ala Lys 210 215 220		
Ser Ile Trp Ala Gly Thr Leu Val Ala Leu Val Ile Tyr Val Leu Trp 225 230 235 240		
Gln Thr Ala Ile Gln Ser Asn Leu Pro Arg Asn Glu Phe Ala Pro Val 245 250 255		
Ile Ala Ala Glu Arg Gln Leu Ser Val Leu Asn Glu Thr Leu Ser Lys 260 265 270		
Phe Ala Gln Thr Gly Asp Met Asp Lys Ile Leu Ser Leu Phe Pro Tyr 275 280 285		
Met Ala Ile Ala Thr Ser Phe Leu Gly Val Thr Leu Gly Leu Phe Asp 290 295 300		
Asn Ile Ala Asp Ile Phe Lys Trp Asn Asp Ser Met Ser Gly Arg Gly 305 310 315 320		
Thr Lys Thr Val Ala Leu Asn Phe Leu Pro Pro Leu Ile Ser Trp Leu 325 330 335		
Leu Leu Pro Thr Gly Phe Phe Thr Ala Ile Gly Ala Ser Gly Leu Ala 340 345 350		
Ala Thr Val Trp Asp Gln Gly Ile Ile Pro Ala Met Leu Leu Tyr Val		

355                      360                      365  
 Ser Pro Gln Lys Ile Gly Ala Gly Lys Thr Tyr Lys Val Tyr Gly Gly  
       370                      375                      380  
 Leu Trp Leu Met Leu Val Phe Leu Phe Gly Ile Ala Asn Ile Ala Ala  
 385                      390                      395                      400  
 Gln Val Leu Ser Gln Met Glu Leu Val Pro Val Phe Lys Gly  
                     405                      410

<210> 359  
 <211> 1242  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 359  
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 ggcgaggca tgctcgcaa ccgaccgcc acatccggcg tatggtttac cggctcgctg 120  
 gccgtgttg tgtacacctg gttttctatg cttccagcg gcctgatgat ttggaagtc 180  
 aacaccatt atccgcacgg cgcaagtttc gacacgatgg tcaaagacct gctcggacgc 240  
 ggctggaaca tcatcaacgg catcgccgtc gccttcgttt tatacctgct tacttacgct 300  
 tatactctcg tcggcggcga cctgaccgcc aaaggcttag gcagcgcggc aggcggcgac 360  
 gtttcaactca ccgtcggaca actcgtcttc ttccgcatcc tcgccttttg cgtatgggca 420  
 tcgcacgct tggtcgaccg cttcaccggc gtccctatcg gcggcatggt attgaccttt 480  
 atttgggcgg ccggcgggct gattgccgat gccaaaggcgt ccgtcctctt cgatacccaa 540  
 gccccgcgg gcacaaacta ctggatttac gccgccaccg ccctgcccgct ctgcctcgct 600  
 tccttcggct tcacggcaa cgtctccagc ctgctcaaact actttaagcg cgacgcgcc 660  
 aaagtggcta aatccatctg gacgggcaca ctgattgcgc tggtaattta cgtcctctgg 720  
 caaacggcca tccaaggcaa cctgccgcgc aacgagttcg ccccgctcat cgccgcgaa 780  
 gggcaagtct ccgtcctcat cgaaaccctg tccaaattcg cccaaaccgg caatatggac 840  
 aaaatattgt ccctgttttc ctatatggcg atcgccacct cgtttttagg cgtaacgctc 900  
 ggactcttcg actacatcgc cgacatcttc aaatggaacg acagcatctc cggccgcacc 960  
 aaaaccgcc cgctgacctt cctgccgcc ctgatttcct gcctgctctt cccaccggc 1020  
 ttggttaccg ccacggcta cgtcggcctg gcggcaaccg tctggacagg catcatcccc 1080  
 gccatgctgc tctaccgttc gcgcaaaaaa ttccggcgag gcaaaccta taaagtttac 1140  
 ggcggttgt ggctgatggt ttgggtcttc ctttcggca tcgtcaacat cgccgcacag 1200  
 gtattgagcc aaatggaact cgtccccgta tttaaaggat aa 1242

<210> 360  
 <211> 413  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 360  
 Met Pro Asn Lys Thr Pro Ser Leu Phe Gly Gly Ala Met Ile Ile Ala  
   1                      5                      10                      15  
 Gly Thr Val Ile Gly Ala Gly Met Leu Ala Asn Pro Thr Ala Thr Ser  
           20                      25                      30  
 Gly Val Trp Phe Thr Gly Ser Leu Ala Val Leu Leu Tyr Thr Trp Phe  
       35                      40                      45  
 Ser Met Leu Ser Ser Gly Leu Met Ile Leu Glu Val Asn Thr His Tyr

50	55	60
Pro His Gly Ala Ser Phe Asp Thr Met Val Lys Asp Leu Leu Gly Arg 65 70 75 80		
Gly Trp Asn Ile Ile Asn Gly Ile Ala Val Ala Phe Val Leu Tyr Leu 85 90 95		
Leu Thr Tyr Ala Tyr Ile Phe Val Gly Gly Asp Leu Thr Ala Lys Gly 100 105 110		
Leu Gly Ser Ala Ala Gly Gly Asp Val Ser Leu Thr Val Gly Gln Leu 115 120 125		
Val Phe Phe Gly Ile Leu Ala Phe Cys Val Trp Ala Ser Ala Arg Leu 130 135 140		
Val Asp Arg Phe Thr Gly Val Leu Ile Gly Gly Met Val Leu Thr Phe 145 150 155 160		
Ile Trp Ala Ala Gly Gly Leu Ile Ala Asp Ala Lys Pro Ser Val Leu 165 170 175		
Phe Asp Thr Gln Ala Pro Ala Gly Thr Asn Tyr Trp Ile Tyr Ala Ala 180 185 190		
Thr Ala Leu Pro Val Cys Leu Ala Ser Phe Gly Phe His Gly Asn Val 195 200 205		
Ser Ser Leu Leu Lys Tyr Phe Lys Gly Asp Ala Pro Lys Val Ala Lys 210 215 220		
Ser Ile Trp Thr Gly Thr Leu Ile Ala Leu Val Ile Tyr Val Leu Trp 225 230 235 240		
Gln Thr Ala Ile Gln Gly Asn Leu Pro Arg Asn Glu Phe Ala Pro Val 245 250 255		
Ile Ala Ala Glu Gly Gln Val Ser Val Leu Ile Glu Thr Leu Ser Lys 260 265 270		
Phe Ala Gln Thr Gly Asn Met Asp Lys Ile Leu Ser Leu Phe Ser Tyr 275 280 285		
Met Ala Ile Ala Thr Ser Phe Leu Gly Val Thr Leu Gly Leu Phe Asp 290 295 300		
Tyr Ile Ala Asp Ile Phe Lys Trp Asn Asp Ser Ile Ser Gly Arg Thr 305 310 315 320		
Lys Thr Ala Ala Leu Thr Phe Leu Pro Pro Leu Ile Ser Cys Leu Leu 325 330 335		
Phe Pro Thr Gly Phe Val Thr Ala Ile Gly Tyr Val Gly Leu Ala Ala 340 345 350		
Thr Val Trp Thr Gly Ile Ile Pro Ala Met Leu Leu Tyr Arg Ser Arg		

355                      360                      365  
 Lys Lys Phe Gly Ala Gly Lys Thr Tyr Lys Val Tyr Gly Gly Leu Trp  
 370                      375                      380  
 Leu Met Val Trp Val Phe Leu Phe Gly Ile Val Asn Ile Ala Ala Gln  
 385                      390                      395                      400  
 Val Leu Ser Gln Met Glu Leu Val Pro Val Phe Lys Gly  
 405                      410

<210> 361  
 <211> 1242  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 361  
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 ggcgcaggtg tgctcgccaa cccgaccgcc acatccggcg tatggtttac cggctcgctg 120  
 gccgtgttgc tgtacacctg gttttccatg ctctccagcg gcctgatgat tttggaagtc 180  
 aacaccact accccacgg cgcgancctc gacaccatgg ttaaagacct gtcggacgg 240  
 agctggaaca tcatcaacgg catcgccgct gccttcgttt tatacctgct tacttacgct 300  
 tatactctcg tcggcggcga cctgaccgcc aaaggcttag gcagcgcggc aggcggcaat 360  
 gtttctactca ccgtcggaca actcgtcttc ttccgcattc tcgccttttg cgtatgggca 420  
 tccgcacgct tggtcgaccg attcaccagc gtccctcatg gcggcatggt attaaccttt 480  
 atttgggcaa ccggcggcct gattgccgat gccaaactgc ccgtcctctt cgacacccaa 540  
 gccctaccg gcaccaacta ctggatttat gtgccaccg ccctgccctg ctgccttgcg 600  
 tcattcgggt tccacggcaa cgtctccagc ctgctcaaact actttaagg cgacgcgcc 660  
 aaagtggcta aatccatctg gacgggcaca ctgattgcgc tggtaattta cgtcctctgg 720  
 caaacggcca tccaangcaa cctgcgcgcg aacgagttcg ccccgatgat tgccgccgaa 780  
 gggcaagtct ccgtctgat tgaaccctg tccaaattcg cccaaaccgg caatatggac 840  
 aaaatattgt ccctgttttc ctatatggcg atcgccacct cgttttttagg cgtaacgctc 900  
 ggactcttcg actacatcgc cgacatcttc aaatggaacg acagcgtgct cggccgcacc 960  
 aaaaccgccc cgctgacctt cctgcgcct ntaatttct gcctgctctt cccaccggc 1020  
 tttgttacgg ccacggnta cgtcggcctg gcggcaaccg tctggacagg catcatcccc 1080  
 gccatgctgc tntaccgttc gcgcaaaaaa ttccggcgag gcaaaacctt taaagtttac 1140  
 ggcggcttgt ggctgatggt ttgggtcttc cttttcgga tcntcaacat cgccgcacan 1200  
 gtattgagcc aatggaact cgtccccgta tttaaaggat aa 1242

<210> 362  
 <211> 413  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 362  
 Met Pro Thr Lys Thr Pro Ser Leu Phe Gly Gly Ala Met Ile Ile Ala  
 1                      5                      10                      15  
 Gly Thr Xaa Ile Gly Ala Gly Met Leu Ala Asn Pro Thr Ala Thr Ser  
 20                      25                      30  
 Gly Val Trp Phe Thr Gly Ser Leu Ala Val Leu Leu Tyr Thr Trp Phe  
 35                      40                      45  
 Ser Met Leu Ser Ser Gly Leu Met Ile Leu Glu Val Asn Thr His Tyr

50					55					60						
Pro	His	Gly	Ala	Xaa	Phe	Asp	Thr	Met	Val	Lys	Asp	Leu	Leu	Gly	Arg	
65					70					75					80	
Ser	Trp	Asn	Ile	Ile	Asn	Gly	Ile	Ala	Val	Ala	Phe	Val	Leu	Tyr	Leu	
				85					90					95		
Leu	Thr	Tyr	Ala	Tyr	Ile	Phe	Val	Gly	Gly	Asp	Leu	Thr	Ala	Lys	Gly	
			100					105					110			
Leu	Gly	Ser	Ala	Ala	Gly	Gly	Asn	Val	Ser	Leu	Thr	Val	Gly	Gln	Leu	
		115					120					125				
Val	Phe	Phe	Gly	Ile	Leu	Ala	Phe	Cys	Val	Trp	Ala	Ser	Ala	Arg	Leu	
	130					135					140					
Val	Asp	Arg	Phe	Thr	Ser	Val	Leu	Ile	Gly	Gly	Met	Val	Leu	Thr	Phe	
145					150					155					160	
Ile	Trp	Ala	Thr	Gly	Gly	Leu	Ile	Ala	Asp	Ala	Lys	Leu	Pro	Val	Leu	
				165					170					175		
Phe	Asp	Thr	Gln	Ala	Pro	Thr	Gly	Thr	Asn	Tyr	Trp	Ile	Tyr	Val	Ala	
			180					185					190			
Thr	Ala	Leu	Pro	Val	Cys	Leu	Ala	Ser	Phe	Gly	Phe	His	Gly	Asn	Val	
		195					200					205				
Ser	Ser	Leu	Leu	Lys	Tyr	Phe	Lys	Gly	Asp	Ala	Pro	Lys	Val	Ala	Lys	
		210				215					220					
Ser	Ile	Trp	Thr	Gly	Thr	Leu	Ile	Ala	Leu	Val	Ile	Tyr	Val	Leu	Trp	
225					230					235				240		
Gln	Thr	Ala	Ile	Gln	Xaa	Asn	Leu	Pro	Arg	Asn	Glu	Phe	Ala	Pro	Val	
				245					250				255			
Ile	Ala	Ala	Glu	Gly	Gln	Val	Ser	Val	Xaa	Ile	Glu	Thr	Leu	Ser	Lys	
			260					265					270			
Phe	Ala	Gln	Thr	Gly	Asn	Met	Asp	Lys	Ile	Leu	Ser	Leu	Phe	Ser	Tyr	
		275					280					285				
Met	Ala	Ile	Ala	Thr	Ser	Phe	Leu	Gly	Val	Thr	Leu	Gly	Leu	Phe	Asp	
		290				295					300					
Tyr	Ile	Ala	Asp	Ile	Phe	Lys	Trp	Asn	Asp	Ser	Val	Ser	Gly	Arg	Thr	
305					310					315				320		
Lys	Thr	Ala	Ala	Leu	Thr	Phe	Leu	Pro	Pro	Xaa	Ile	Ser	Cys	Leu	Leu	
					325					330				335		
Phe	Pro	Thr	Gly	Phe	Val	Thr	Ala	Ile	Gly	Tyr	Val	Gly	Leu	Ala	Ala	
			340					345					350			

Thr Val Trp Thr Gly Ile Ile Pro Ala Met Leu Leu Tyr Arg Ser Arg  
 355 360 365

Lys Lys Phe Gly Ala Gly Lys Thr Tyr Lys Val Tyr Gly Gly Leu Trp  
 370 375 380

Leu Met Val Trp Val Phe Leu Phe Gly Ile Xaa Asn Ile Ala Ala Xaa  
 385 390 395 400

Val Leu Ser Gln Met Glu Leu Val Pro Val Phe Lys Gly  
 405 410

<210> 363

<211> 870

<212> DNA

<213> Neisseria gonorrhoeae

<400> 363

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atgtccgcag aaacatacac acaaatcggc tgggtaggct tagggcaaat gggctctgcct 60
atggtaacgc ggctcttgga cggcggcatc gaagtcggcg tatacaaccg ctgccccgac 120
aaaactgccc ccattctccgc caaaggagca aaagtttacg gcagcaccgc cgaactcgtc 180
cgcgcctgcc ccgtcatctt cctgatggtt tccgactatg ccgccgtgtg cgacatcctg 240
aacggagtcc gcgacggatt ggccggcaaa atcatcgta acatgagcac catctccccg 300
accgaaaacc tcgccgtcaa agcacttgct gaagccgcag gcggacagtt tgccgaagca 360
cccgtttccg gatcggtcgg acccgccacc aacggcacac tgctgattct gtccggcggc 420
agcgaagccg ttttaaaccc gctgcaaaaa atattttccc ttgtcggcaa aaaaaccttc 480
catttcggcg atgtcggcaa aggctcgggc gcgaaactcg tcttgaactc gctcttaggc 540
attttcggcg aagcgtacag cgaagcgatg ctgatggcgc ggcagttcgg catcgatacc 600
gacaccatcg tcgaagccat cggcggctcg gcaatggact cgcctatgtt tcaaacaaaa 660
aaatcactat gggcaaaccg tgagttcccc cctgcctttg cactcaaaca cgcttccaaa 720
gaccttaacc tcgccgtcaa agagcttgaa caggcaggca acaccctgcc cgccgtcgaa 780
accgttgctg ccagctaccg caaagcagtt gaagccggct acggcgaaca ggacgtttcc 840
ggcgtttacc tgaaattggc agaacactga

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<210> 364

<211> 289

<212> PRT

<213> Neisseria gonorrhoeae

<400> 364

Met Ser Ala Glu Thr Tyr Thr Gln Ile Gly Trp Val Gly Leu Gly Gln  
 1 5 10 15

Met Gly Leu Pro Met Val Thr Arg Leu Leu Asp Gly Gly Ile Glu Val  
 20 25 30

Gly Val Tyr Asn Arg Ser Pro Asp Lys Thr Ala Pro Ile Ser Ala Lys  
 35 40 45

Gly Ala Lys Val Tyr Gly Ser Thr Ala Glu Leu Val Arg Ala Cys Pro  
 50 55 60

Val Ile Phe Leu Met Val Ser Asp Tyr Ala Ala Val Cys Asp Ile Leu  
 65 70 75 80

Asn Gly Val Arg Asp Gly Leu Ala Gly Lys Ile Ile Val Asn Met Ser  
                     85                    90                    95  
 Thr Ile Ser Pro Thr Glu Asn Leu Ala Val Lys Ala Leu Val Glu Ala  
                     100                    105                    110  
 Ala Gly Gly Gln Phe Ala Glu Ala Pro Val Ser Gly Ser Val Gly Pro  
                     115                    120                    125  
 Ala Thr Asn Gly Thr Leu Leu Ile Leu Phe Gly Gly Ser Glu Ala Val  
                     130                    135                    140  
 Leu Asn Pro Leu Gln Lys Ile Phe Ser Leu Val Gly Lys Lys Thr Phe  
                     145                    150                    155                    160  
 His Phe Gly Asp Val Gly Lys Gly Ser Gly Ala Lys Leu Val Leu Asn  
                     165                    170                    175  
 Ser Leu Leu Gly Ile Phe Gly Glu Ala Tyr Ser Glu Ala Met Leu Met  
                     180                    185                    190  
 Ala Arg Gln Phe Gly Ile Asp Thr Asp Thr Ile Val Glu Ala Ile Gly  
                     195                    200                    205  
 Gly Ser Ala Met Asp Ser Pro Met Phe Gln Thr Lys Lys Ser Leu Trp  
                     210                    215                    220  
 Ala Asn Arg Glu Phe Pro Pro Ala Phe Ala Leu Lys His Ala Ser Lys  
                     225                    230                    235                    240  
 Asp Leu Asn Leu Ala Val Lys Glu Leu Glu Gln Ala Gly Asn Thr Leu  
                     245                    250                    255  
 Pro Ala Val Glu Thr Val Ala Ala Ser Tyr Arg Lys Ala Val Glu Ala  
                     260                    265                    270  
 Gly Tyr Gly Glu Gln Asp Val Ser Gly Val Tyr Leu Lys Leu Ala Glu  
                     275                    280                    285

His

<210> 365

<211> 864

<212> DNA

<213> Neisseria meningitidis

<400> 365

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 atggtaacgc ggctcttgga cggcggcatc gaagtcggcg tatacaaccg ctgcgccgac 120  
 aaaactgccc ccattctccgc caaaggcgca aaagtgttac gcaacaccgc cgaactcgtc 180  
 cgcgactatc ccgtcatttt cctgatgggt tccgactatg ccgccgtgtg cgacatcctg 240  
 aacggagtcg gcgacggatt ggccggcaam atcatcgtca acatgagcac catctccccg 300  
 accgaaaagc tcgccgtcaa agcacttgct gaagcgcagm gacagtttgc cgaagcacc 360  
 gtttccggat cggtcgggac cgccaccaac ggcacgctgc tgattctgtt cggcggcagc 420  
 gaaccgtttt aaaccgctg caaaaaatat tttccctcgt cggcaaaaaa accttccatt 480

tcggcgatgt cggcaaaggt tcgggcgcga aactcgtctt gaactcgctc ttgggcattt 540  
tcggcgaaacg tacagcgaas gmtgctgatg gcgcggcagt tcggcatcga taccgacacc 600  
atcgctcgaag ccacgcgsga ctcggaatg gactcgccca tggtccaaac caaaaaatcc 660  
ctgtgggcaa accgcgaatt cccgmccgmc ttcgccctca aacacgcctc caaagacctc 720  
aacctcgccg tcaaagagct tgaacaggca ggcaacaccc tgcccggcgt cgaaaccggt 780  
gctgccagct accgcaaagc agtcgaagcc ggctacggga cacaggacgt ttccggcggt 840  
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<210> 366

<211> 287

<212> PRT

<213> Neisseria meningitidis

<400> 366

Met	Ser	Ala	Asn	Glu	Tyr	Ala	Gln	Ile	Gly	Trp	Ile	Gly	Leu	Gly	Gln
1				5					10					15	
Met	Gly	Leu	Pro	Met	Val	Thr	Arg	Leu	Leu	Asp	Gly	Gly	Ile	Glu	Val
			20					25					30		
Gly	Val	Tyr	Asn	Arg	Ser	Pro	Asp	Lys	Thr	Ala	Pro	Ile	Ser	Ala	Lys
		35					40					45			
Gly	Ala	Lys	Val	Tyr	Gly	Asn	Thr	Ala	Glu	Leu	Val	Arg	Asp	Tyr	Pro
	50					55					60				
Val	Ile	Phe	Leu	Met	Val	Ser	Asp	Tyr	Ala	Ala	Val	Cys	Asp	Ile	Leu
65					70					75					80
Asn	Gly	Val	Arg	Asp	Gly	Leu	Ala	Gly	Xaa	Ile	Ile	Val	Asn	Met	Ser
				85				90						95	
Thr	Ile	Ser	Pro	Thr	Glu	Lys	Leu	Ala	Val	Lys	Ala	Leu	Val	Glu	Ala
			100					105					110		
Gln	Arg	Gln	Phe	Ala	Glu	Ala	Pro	Val	Ser	Gly	Ser	Val	Gly	Pro	Ala
		115					120					125			
Thr	Asn	Gly	Thr	Leu	Leu	Ile	Leu	Phe	Gly	Gly	Ser	Glu	Pro	Phe	Xaa
	130					135					140				
Thr	Arg	Cys	Lys	Lys	Tyr	Phe	Pro	Ser	Ser	Ala	Lys	Lys	Pro	Ser	Ile
145					150					155					160
Ser	Ala	Met	Ser	Ala	Lys	Val	Arg	Ala	Arg	Asn	Ser	Ser	Xaa	Thr	Arg
				165					170					175	
Ser	Trp	Ala	Phe	Ser	Ala	Asn	Val	Gln	Arg	Xaa	Xaa	Leu	Met	Ala	Arg
			180					185					190		
Gln	Phe	Gly	Ile	Asp	Thr	Asp	Thr	Ile	Val	Glu	Ala	Ile	Gly	Asp	Ser
		195					200					205			
Ala	Met	Asp	Ser	Pro	Met	Phe	Gln	Thr	Lys	Lys	Ser	Leu	Trp	Ala	Asn
	210					215					220				



Arg Glu Phe Pro Xaa Xaa Phe Ala Leu Lys His Ala Ser Lys Asp Leu  
 225 230 235 240

Asn Leu Ala Val Lys Glu Leu Glu Gln Ala Gly Asn Thr Leu Pro Ala  
 245 250 255

Val Glu Thr Val Ala Ala Ser Tyr Arg Lys Ala Val Glu Ala Gly Tyr  
 260 265 270

Gly Thr Gln Asp Val Ser Gly Val Tyr Leu Lys Leu Ala Glu His  
 275 280 285

<210> 367  
 <211> 870  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 367  
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 aaaactgccc ccattctccgc caaaggcgca aaagtgttacg gcaacaccgc cgaactcgtc 180  
 cgcgactatc ccgtcatttt cctgatgggt tccgactatg ccgccgtgtg cgacatcctg 240  
 aacggagtcc ggcacggatt ggccggcaaa atcatcgtca acatgagcac catctccccg 300  
 accgaaaacc tcgccgtcaa agcacttgct gaagccgcag gcggacagtt tgccgaagca 360  
 cccgtttccg gatcgggtcgg gcccgccacc aacggcacgc tgctgattct gttcggcggc 420  
 agcgaagccg ttttaaacc cgtgcaaaaa atattttccc tcgtcggcaa aaaaaccttc 480  
 catttcggcg atgtcggcaa aggttcgggc gcgaaactcg tcttgaactc gctcttgggc 540  
 attttcggcg aagcgtacag cgaagcgatg ctgatggcgc ggcagttcgg catcgatacc 600  
 gacaccatcg tcgaagccat cggcggctcg gcaatggact cgcccatgtt ccaaaccaaa 660  
 aaatccctgt gggcaaacgc cgaattccca cccgccttcg cctcacaaca cgcctccaaa 720  
 gacctcaacc tcgccgtcaa agagcttgaa caggcaggca acaccctgcc cgccgtcgaa 780  
 accgttgctg ccagctaccg caaagcagtc gaagccggct acggcgaaca ggacgtttcc 840  
 ggcgtttacc tgaaattggc agaacactga 870

<210> 368  
 <211> 289  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 368  
 Met Ser Ala Asn Glu Tyr Thr Gln Ile Gly Trp Ile Gly Leu Gly Gln  
 1 5 10 15

Met Gly Leu Pro Met Val Thr Arg Leu Leu Asp Gly Gly Ile Glu Val  
 20 25 30

Gly Val Tyr Asn Arg Ser Pro Asp Lys Thr Ala Pro Ile Ser Ala Lys  
 35 40 45

Gly Ala Lys Val Tyr Gly Asn Thr Ala Glu Leu Val Arg Asp Tyr Pro  
 50 55 60

Val Ile Phe Leu Met Val Ser Asp Tyr Ala Ala Val Cys Asp Ile Leu  
 65 70 75 80

Asn Gly Val Arg Asp Gly Leu Ala Gly Lys Ile Ile Val Asn Met Ser  
                     85                    90                    95  
 Thr Ile Ser Pro Thr Glu Asn Leu Ala Val Lys Ala Leu Val Glu Ala  
                     100                    105                    110  
 Ala Gly Gly Gln Phe Ala Glu Ala Pro Val Ser Gly Ser Val Gly Pro  
                     115                    120                    125  
 Ala Thr Asn Gly Thr Leu Leu Ile Leu Phe Gly Gly Ser Glu Ala Val  
                     130                    135                    140  
 Leu Asn Pro Leu Gln Lys Ile Phe Ser Leu Val Gly Lys Lys Thr Phe  
                     145                    150                    155                    160  
 His Phe Gly Asp Val Gly Lys Gly Ser Gly Ala Lys Leu Val Leu Asn  
                     165                    170                    175  
 Ser Leu Leu Gly Ile Phe Gly Glu Ala Tyr Ser Glu Ala Met Leu Met  
                     180                    185                    190  
 Ala Arg Gln Phe Gly Ile Asp Thr Asp Thr Ile Val Glu Ala Ile Gly  
                     195                    200                    205  
 Gly Ser Ala Met Asp Ser Pro Met Phe Gln Thr Lys Lys Ser Leu Trp  
                     210                    215                    220  
 Ala Asn Arg Glu Phe Pro Pro Ala Phe Ala Leu Lys His Ala Ser Lys  
                     225                    230                    235                    240  
 Asp Leu Asn Leu Ala Val Lys Glu Leu Glu Gln Ala Gly Asn Thr Leu  
                     245                    250                    255  
 Pro Ala Val Glu Thr Val Ala Ala Ser Tyr Arg Lys Ala Val Glu Ala  
                     260                    265                    270  
 Gly Tyr Gly Glu Gln Asp Val Ser Gly Val Tyr Leu Lys Leu Ala Glu  
                     275                    280                    285

His

<210> 369  
 <211> 870  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 369.  
 atgtccgcag aaacatacac acaaatcggc tgggtaggct tagggcaaat ggtctgcct 60  
 atggtaacgc ggctcttggg cggcggcatc gaagtcggcg tatacaaccg ctgcgccgac 120  
 aaaactgccc ccatctccgc caaaggagca aaagtttacg gcagcaccgc cgaactcgtc 180  
 cgcgcctgcc ccgtcatttt cctgatggtt tccgactatg ccgccgtgtg cgacatcctg 240  
 aacggagtcg ggcacggatt ggccggcaaa atcatcgtca acatgagcac catctccccg 300  
 accgaaaacc tcgccgtcaa agcacttgtc gaagccgcag gcggacagtt tgccgaagca 360  
 cccgtttccg gatcggtcgg acccgccacc aacggcacac tgctgattct gttcggcggc 420  
 agcgaagccg ttttaaaccg gctgcaaaaa atattttccc ttgtcggcaa aaaaaccttc 480

```

catttcggcg atgtcggcaa aggctcgggc gcgaaactcg tcttgaactc gctcttaggc 540
atatttcggcg aagcgtaca g aagcgcgatg ctgatggcgc ggcagttcgg catcgatacc 600
gacaccatcg tcgaagccat cggcggctcg gcaatggact cgcctatggt tcaaacaaaa 660
aaatcactat gggcaaaccg tgagttcccc cctgcctttg cactcaaaca cgcttccaâa 720
gaccttaacc tcgccgtcaa agagcttgaa caggcaggca acaccctgcc cgccgtcgaa 780
accgttgctg ccagctaccg caaagcagtt gaagccggct acggcgaaca ggacgtttcc 840
ggcgtttacc tgaaattggc agaacactga 870

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<210> 370

<211> 289

<212> PRT

<213> Neisseria gonorrhoeae

<400> 370

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Met Ser Ala Glu Thr Tyr Thr Gln Ile Gly Trp Val Gly Leu Gly Gln
  1             5             10             15

```

```

Met Gly Leu Pro Met Val Thr Arg Leu Leu Asp Gly Gly Ile Glu Val
      20             25             30

```

```

Gly Val Tyr Asn Arg Ser Pro Asp Lys Thr Ala Pro Ile Ser Ala Lys
      35             40             45

```

```

Gly Ala Lys Val Tyr Gly Ser Thr Ala Glu Leu Val Arg Ala Cys Pro
      50             55             60

```

```

Val Ile Phe Leu Met Val Ser Asp Tyr Ala Ala Val Cys Asp Ile Leu
      65             70             75             80

```

```

Asn Gly Val Arg Asp Gly Leu Ala Gly Lys Ile Ile Val Asn Met Ser
      85             90             95

```

```

Thr Ile Ser Pro Thr Glu Asn Leu Ala Val Lys Ala Leu Val Glu Ala
     100             105             110

```

```

Ala Gly Gly Gln Phe Ala Glu Ala Pro Val Ser Gly Ser Val Gly Pro
     115             120             125

```

```

Ala Thr Asn Gly Thr Leu Leu Ile Leu Phe Gly Gly Ser Glu Ala Val
     130             135             140

```

```

Leu Asn Pro Leu Gln Lys Ile Phe Ser Leu Val Gly Lys Lys Thr Phe
     145             150             155             160

```

```

His Phe Gly Asp Val Gly Lys Gly Ser Gly Ala Lys Leu Val Leu Asn
     165             170             175

```

```

Ser Leu Leu Gly Ile Phe Gly Glu Ala Tyr Ser Glu Ala Met Leu Met
     180             185             190

```

```

Ala Arg Gln Phe Gly Ile Asp Thr Asp Thr Ile Val Glu Ala Ile Gly
     195             200             205

```

```

Gly Ser Ala Met Asp Ser Pro Met Phe Gln Thr Lys Lys Ser Leu Trp
     210             215             220

```

Ala Asn Arg Glu Phe Pro Pro Ala Phe Ala Leu Lys His Ala Ser Lys  
 225 230 235 240

Asp Leu Asn Leu Ala Val Lys Glu Leu Glu Gln Ala Gly Asn Thr Leu  
 245 250 255

Pro Ala Val Glu Thr Val Ala Ala Ser Tyr Arg Lys Ala Val Glu Ala  
 260 265 270

Gly Tyr Gly Glu Gln Asp Val Ser Gly Val Tyr Leu Lys Leu Ala Glu  
 275 280 285

His

<210> 371  
 <211> 870  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 371  
 atgtccgcaa acgaatacgc acaaatcggc tggataggct tagggcaaat gggctctgcct 60  
 atggtaacgc ggctcttgga cggcggcatc gaagtcggcg tatacaaccg ctgcccgcac 120  
 aaaactgccc ccatctccgc caaaggcgca aaagtgttac gcaacaccgc cgaactcgtc 180  
 cgcgactatc ccgtcatttt cctgatgggt tccgactatg ccgccgtgtg cgacatcctg 240  
 aacggagtcg gcgacggatt ggccggcaaa atcatcgtca acatgagcac catctccccg 300  
 accgaaaacc tcgccgtcaa agcacttgct gaagccgcag gcggacagtt tgccgaagca 360  
 cccgtttccg gatcggtcgg gcccgccacc aacggcacgc tgctgattct gtccggcggc 420  
 agcgaagccg ttttaaaccg gctgcaaaaa atattttccc tcgtcggcaa aaaaaccttc 480  
 catttcggcg atgtcggcaa aggttcgggc gcgaaactcg tcttgaactc gctcttgggc 540  
 attttcggcg aagcgtacag cgaancgatg ctgatggcgc ggcagttcgg catcgatacc 600  
 gacaccatcg tcgaagccat cggsgactcg gcaatggact cgcccatgtt ccaaaccaaa 660  
 aaatccctgt gggcaaaccg cgaattcccg cccgccttcg ccctcaaaca cgccctccaa 720  
 gacctcaacc tcgccgtcaa agagcttgaa caggcaggca acaccctgcc cgccgtcgaa 780  
 accgttgctg ccagctaccg caaagcagtc gaagccggct acggcgaaca ggacgtttcc 840  
 ggcgtttacc tgaaactggc agaacactga 870

<210> 372  
 <211> 289  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 372  
 Met Ser Ala Asn Glu Tyr Ala Gln Ile Gly Trp Ile Gly Leu Gly Gln  
 1 5 10 15

Met Gly Leu Pro Met Val Thr Arg Leu Leu Asp Gly Gly Ile Glu Val  
 20 25 30

Gly Val Tyr Asn Arg Ser Pro Asp Lys Thr Ala Pro Ile Ser Ala Lys  
 35 40 45

Gly Ala Lys Val Tyr Gly Asn Thr Ala Glu Leu Val Arg Asp Tyr Pro  
 50 55 60

Val Ile Phe Leu Met Val Ser Asp Tyr Ala Ala Val Cys Asp Ile Leu  
 65 70 75 80  
 Asn Gly Val Arg Asp Gly Leu Ala Gly Lys Ile Ile Val Asn Met Ser  
 85 90 95  
 Thr Ile Ser Pro Thr Glu Asn Leu Ala Val Lys Ala Leu Val Glu Ala  
 100 105 110  
 Ala Gly Gly Gln Phe Ala Glu Ala Pro Val Ser Gly Ser Val Gly Pro  
 115 120 125  
 Ala Thr Asn Gly Thr Leu Leu Ile Leu Phe Gly Gly Ser Glu Ala Val  
 130 135 140  
 Leu Asn Pro Leu Gln Lys Ile Phe Ser Leu Val Gly Lys Lys Thr Phe  
 145 150 155 160  
 His Phe Gly Asp Val Gly Lys Gly Ser Gly Ala Lys Leu Val Leu Asn  
 165 170 175  
 Ser Leu Leu Gly Ile Phe Gly Glu Ala Tyr Ser Glu Xaa Met Leu Met  
 180 185 190  
 Ala Arg Gln Phe Gly Ile Asp Thr Asp Thr Ile Val Glu Ala Ile Gly  
 195 200 205  
 Asp Ser Ala Met Asp Ser Pro Met Phe Gln Thr Lys Lys Ser Leu Trp  
 210 215 220  
 Ala Asn Arg Glu Phe Pro Pro Ala Phe Ala Leu Lys His Ala Ser Lys  
 225 230 235 240  
 Asp Leu Asn Leu Ala Val Lys Glu Leu Glu Gln Ala Gly Asn Thr Leu  
 245 250 255  
 Pro Ala Val Glu Thr Val Ala Ala Ser Tyr Arg Lys Ala Val Glu Ala  
 260 265 270  
 Gly Tyr Gly Glu Gln Asp Val Ser Gly Val Tyr Leu Lys Leu Ala Glu  
 275 280 285

His

<210> 373

<211> 870

<212> DNA

<213> *Neisseria meningitidis*

<400> 373

atgtccgcaa acgaatacac acaaatcggc tggataggct tagggcaaat gggctctgcct 60  
 atggtaacgc ggctcttggc cggcggcatc gaagtcggcg tatacaaccg ctgccccgac 120  
 aaaactgccc ccattctccgc caaaggcgca aaagtttacg gcaacaccgc cgaactcgtc 180  
 cgcgactatc ccgtcatttt cctgatggtt tccgactatg ccgccgtgtg cgacatcctg 240  
 aacggagtcg gcgacggatt ggccggcaaa atcatcggtc acatgagcac catctccccg 300

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accgaaaacc tcgccgtcaa agcacttgct gaagccgcag gcggacagtt tgccgaagca 360
cccgtttccg gatcggtcgg gcccgccacc aacggcacgc tgctgattct gttcggcggc 420
agcgaagccg ttttaaacc gctgcaaaaa atattttccc tcgtcggcaa aaaaaccttc 480
catttcggcg atgtcggcaa aggttcgggc gcgaaactcg tcttgaactc gctcttgggc 540
attttcggcg aagcgtacag cgaagcgatg ctgatggcgc ggcagttcgg catcgatacc 600
gacaccatcg tcgaagccat cggcggctcg gcaatggact cgcccatgtt ccaaaccaaa 660
aaatccctgt gggcaaaccg cgaattccca cccgccttcg ccctcaaaca cgcctccaaa 720
gacctcaacc tcgccgtcaa agagcttgaa caggcaggca acaccctgcc cgccgtcgaa 780
accgttgctg ccagctaccg caaagcagtc gaagccggct acggcgaaca ggacgtttcc 840
ggcgtttacc tgaaattggc agaactga
870

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<210> 374  
 <211> 289  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 374

Met	Ser	Ala	Asn	Glu	Tyr	Thr	Gln	Ile	Gly	Trp	Ile	Gly	Leu	Gly	Gln
1				5					10				15		
Met	Gly	Leu	Pro	Met	Val	Thr	Arg	Leu	Leu	Asp	Gly	Gly	Ile	Glu	Val
			20					25					30		
Gly	Val	Tyr	Asn	Arg	Ser	Pro	Asp	Lys	Thr	Ala	Pro	Ile	Ser	Ala	Lys
		35					40					45			
Gly	Ala	Lys	Val	Tyr	Gly	Asn	Thr	Ala	Glu	Leu	Val	Arg	Asp	Tyr	Pro
	50					55					60				
Val	Ile	Phe	Leu	Met	Val	Ser	Asp	Tyr	Ala	Ala	Val	Cys	Asp	Ile	Leu
65					70				75					80	
Asn	Gly	Val	Arg	Asp	Gly	Leu	Ala	Gly	Lys	Ile	Ile	Val	Asn	Met	Ser
			85					90					95		
Thr	Ile	Ser	Pro	Thr	Glu	Asn	Leu	Ala	Val	Lys	Ala	Leu	Val	Glu	Ala
			100				105						110		
Ala	Gly	Gly	Gln	Phe	Ala	Glu	Ala	Pro	Val	Ser	Gly	Ser	Val	Gly	Pro
	115					120					125				
Ala	Thr	Asn	Gly	Thr	Leu	Leu	Ile	Leu	Phe	Gly	Gly	Ser	Glu	Ala	Val
	130				135					140					
Leu	Asn	Pro	Leu	Gln	Lys	Ile	Phe	Ser	Leu	Val	Gly	Lys	Lys	Thr	Phe
145				150					155					160	
His	Phe	Gly	Asp	Val	Gly	Lys	Gly	Ser	Gly	Ala	Lys	Leu	Val	Leu	Asn
			165				170						175		
Ser	Leu	Leu	Gly	Ile	Phe	Gly	Glu	Ala	Tyr	Ser	Glu	Ala	Met	Leu	Met
		180				185						190			
Ala	Arg	Gln	Phe	Gly	Ile	Asp	Thr	Asp	Thr	Ile	Val	Glu	Ala	Ile	Gly
	195					200					205				

Gly Ser Ala Met Asp Ser Pro Met Phe Gln Thr Lys Lys Ser Leu Trp  
210 215 220

Ala Asn Arg Glu Phe Pro Pro Ala Phe Ala Leu Lys His Ala Ser Lys  
225 230 235 240

Asp Leu Asn Leu Ala Val Lys Glu Leu Glu Gln Ala Gly Asn Thr Leu  
245 250 255

Pro Ala Val Glu Thr Val Ala Ala Ser Tyr Arg Lys Ala Val Glu Ala  
260 265 270

Gly Tyr Gly Glu Gln Asp Val Ser Gly Val Tyr Leu Lys Leu Ala Glu  
275 280 285

His

<210> 375

<211> 513

<212> DNA

<213> Neisseria gonorrhoeae

<400> 375

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atggtattaa cctttatttg ggcaaccggc ggccctggtg ccgatgccaa accgtccgtc 60
ctcttcgaca cccaagcccc cgtcggcacc ggctactgga ttacgcccgc caccgccctg 120
cccgtctgcc tcgtttcctt cggcttccac ggcaacgttt ccagcctgct caaatacttt 180
aaaggcgacg cgcccaaagt ggcgaaatcc atctgggcag gtacattggt tgccttggtg 240
atttacgtcc tctggcaaac cgccatccaa agcaacctgc cgcgcaacga gttcgccccc 300
gtgattgccg ccgagaggca actctccgtc ctgaatgaaa ccctgtccaa attcgcccaa 360
accggcgata tggataaaat attgtcccta tttccctaca tggcaatcgc cacctccttt 420
ttaggcgtaa ccttaggcct gtttgacaac atcgccggac atcttcaaat ggaacgacag 480
tatgtccggg cggcaccaaa accgtcgcgc tga 513
```

<210> 376

<211> 170

<212> PRT

<213> Neisseria gonorrhoeae

<400> 376

Met Val Leu Thr Phe Ile Trp Ala Thr Gly Gly Leu Val Ala Asp Ala  
1 5 10 15

Lys Pro Ser Val Leu Phe Asp Thr Gln Ala Pro Val Gly Thr Gly Tyr  
20 25 30

Trp Ile Tyr Ala Ala Thr Ala Leu Pro Val Cys Leu Ala Ser Phe Gly  
35 40 45

Phe His Gly Asn Val Ser Ser Leu Leu Lys Tyr Phe Lys Gly Asp Ala  
50 55 60

Pro Lys Val Ala Lys Ser Ile Trp Ala Gly Thr Leu Val Ala Leu Val  
65 70 75 80

Ile Tyr Val Leu Trp Gln Thr Ala Ile Gln Ser Asn Leu Pro Arg Asn  
85 90 95

Glu Phe Ala Pro Val Ile Ala Ala Glu Arg Gln Leu Ser Val Leu Asn  
100 105 110

Glu Thr Leu Ser Lys Phe Ala Gln Thr Gly Asp Met Asp Lys Ile Leu  
115 120 125

Ser Leu Phe Pro Tyr Met Ala Ile Ala Thr Ser Phe Leu Gly Val Thr  
130 135 140

Leu Gly Leu Phe Asp Asn Ile Ala Gly His Leu Gln Met Glu Arg Gln  
145 150 155 160

Tyr Val Arg Ala Ala Pro Lys Pro Ser Arg  
165 170

<210> 377  
<211> 510  
<212> DNA  
<213> Neisseria meningitidis

<400> 377  
atggtattga cttttatattg ggcgggccggc gggctgattg ccgatgccaa gccgtccgtc 60  
ctcttcgata cccaagcccc cgccgggcaca aactactgga tttagccgs caccgccttg 120  
cccgctgccc tcgtttcctt cggcttccac ggcaacgtct ccagcctgct caaatacttt 180  
aaaggcgacg cgccc aaagt ggctaaatcc atctggacgg gcacactgat tgcgctggta 240  
atttacgtcc tctggcaaac cgccatccaa ggcaacctgc cgcgcaacga gttcgcccc 300  
gtcatcgccg ccgaagggca agtctccgtc ctcatcgaaa ccctgtccaa attcgcccaa 360  
accggcaata tggacaaaat attgtccctg ttttctata tggcgatcgc cacctcgttt 420  
ttaggcgtaa cgctcggact cttcgactac atcgcccata ttcaaatagga acgacagcat 480  
ctccgggccc caccaaaacc gccgcgctga 510

<210> 378  
<211> 169  
<212> PRT  
<213> Neillia sinensis

<400> 378  
Met Val Leu Thr Phe Ile Trp Ala Ala Gly Gly Leu Ile Ala Asp Ala  
1 5 10 15

Lys Pro Ser Val Leu Phe Asp Thr Gln Ala Pro Ala Gly Thr Asn Tyr  
20 25 30

Trp Ile Tyr Ala Xaa Thr Ala Leu Pro Val Cys Leu Ala Ser Phe Gly  
35 40 45

Phe His Gly Asn Val Ser Ser Leu Leu Lys Tyr Phe Lys Gly Asp Ala  
50 55 60

Pro Lys Val Ala Lys Ser Ile Trp Thr Gly Thr Leu Ile Ala Leu Val  
65 70 75 80



Ile Tyr Val Leu Trp Gln Thr Ala Ile Gln Gly Asn Leu Pro Arg Asn  
                     85                    90                    95  
 Glu Phe Ala Pro Val Ile Ala Ala Glu Gly Gln Val Ser Val Leu Ile  
                     100                    105                    110  
 Glu Thr Leu Ser Lys Phe Ala Gln Thr Gly Asn Met Asp Lys Ile Leu  
                     115                    120                    125  
 Ser Leu Phe Ser Tyr Met Ala Ile Ala Thr Ser Phe Leu Gly Val Thr  
                     130                    135                    140  
 Leu Gly Leu Phe Asp Tyr Ile Ala His Leu Gln Met Glu Arg Gln His  
                     145                    150                    155                    160  
 Leu Arg Ala Ala Pro Lys Pro Pro Arg  
                     165

<210> 379  
 <211> 777  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 379  
 atggtattaa cctttatttg ggcaaccggc ggccctgattg ccgatgccaa actgcccgtc 60  
 ctcttcgaca cccaagcccc tacccggcacc aactactgga tttatgtcgc caccgccctg 120  
 cccgtctgcc ttgcgtcatt cggtttccac ggcaacgtct ccagcctgct caaatacttt 180  
 aaaggcgacg cgcccaaagt ggctaaatcc atctggacgg gcacactgat tgcgctggta 240  
 atttacgtcc tctggcaaac cgccatccaa ggcaacctgc cgcgcaacga gttcgccccc 300  
 gtgattgccg ccgaagggca agtctccgtc ctgattgaaa ccctgtccaa attcgcccaa 360  
 accggcaata tggacaaaat attgtccctg ttttccata tggcgatcgc cacctcgttt 420  
 ttaggcgtaa cgctcggact cttcgactac atcgccgaca tcttcaaag gaacgacagc 480  
 gtgtccggcc gcaccaaacc cgccgcgctg accttcctgc cgcttctaatt ttcctgcctg 540  
 ctcttcccca cgggctttgt taccgccatc ggctacgtcg gcctggcggc aaccgtctgg 600  
 acaggcatca tccccgccat gctgctctac cgttcgcgca aaaaattcgg cgcaggcaaa 660  
 acctataaag tttagcgcgg cttgtggctg atggtttggg tcttcctttt cggcatcgtc 720  
 aacatcgccg cacaggtatt gagccaaatg gaactcgtcc ccgtatttaa aggataa 777

<210> 380  
 <211> 258  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 380  
 Met Val Leu Thr Phe Ile Trp Ala Thr Gly Gly Leu Ile Ala Asp Ala  
   1                    5                    10                    15  
 Lys Leu Pro Val Leu Phe Asp Thr Gln Ala Pro Thr Gly Thr Asn Tyr  
                     20                    25                    30  
 Trp Ile Tyr Val Ala Thr Ala Leu Pro Val Cys Leu Ala Ser Phe Gly  
                     35                    40                    45  
 Phe His Gly Asn Val Ser Ser Leu Leu Lys Tyr Phe Lys Gly Asp Ala  
                     50                    55                    60

Pro Lys Val Ala Lys Ser Ile Trp Thr Gly Thr Leu Ile Ala Leu Val  
 65 70 75 80  
 Ile Tyr Val Leu Trp Gln Thr Ala Ile Gln Gly Asn Leu Pro Arg Asn  
 85 90 95  
 Glu Phe Ala Pro Val Ile Ala Ala Glu Gly Gln Val Ser Val Leu Ile  
 100 105 110  
 Glu Thr Leu Ser Lys Phe Ala Gln Thr Gly Asn Met Asp Lys Ile Leu  
 115 120 125  
 Ser Leu Phe Ser Tyr Met Ala Ile Ala Thr Ser Phe Leu Gly Val Thr  
 130 135 140  
 Leu Gly Leu Phe Asp Tyr Ile Ala Asp Ile Phe Lys Trp Asn Asp Ser  
 145 150 155 160  
 Val Ser Gly Arg Thr Lys Thr Ala Ala Leu Thr Phe Leu Pro Pro Leu  
 165 170 175  
 Ile Ser Cys Leu Leu Phe Pro Thr Gly Phe Val Thr Ala Ile Gly Tyr  
 180 185 190  
 Val Gly Leu Ala Ala Thr Val Trp Thr Gly Ile Ile Pro Ala Met Leu  
 195 200 205  
 Leu Tyr Arg Ser Arg Lys Lys Phe Gly Ala Gly Lys Thr Tyr Lys Val  
 210 215 220  
 Tyr Gly Gly Leu Trp Leu Met Val Trp Val Phe Leu Phe Gly Ile Val  
 225 230 235 240  
 Asn Ile Ala Ala Gln Val Leu Ser Gln Met Glu Leu Val Pro Val Phe  
 245 250 255  
 Lys Gly

<210> 381  
 <211> 519  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 381  
 atgttgccgg gcttcaaccg gatattcaaa cggtttgctc caacactcgg aacggcgcat 60  
 aaaacgccgc ctttcgcgtt atcccgaacg gggcggtctaa tcagatccta tcgccataaa 120  
 aggcgggggtt tcaaccgaaa aggaattgag atgaataaaa ctttgtctat ttgcccggcg 180  
 gcaatcttac tcggcgggtg cgccgccggc ggcaacacat tcggcagctt agacggcggc 240  
 acgggtatgg gtggcagcat cgtcaaaatg acggtagaaa gccaatgccg tgcggaattg 300  
 gacaggcgca gcgaatggcg ttgaccgcg ctggcgatga gtgccgaaaa acaggcgga 360  
 tgggaaaaca agatttgcg ctgcgtacc gaagaagcac ctaaccagct gaccggcaac 420  
 gatgtgatgc agatgctgaa ccagtccacg cgcaatcagg cacttgccgc cctgaccgtc 480  
 aaaacggttt ccgcctgctt caaacgcctg taccgctaa 519

<210> 382  
 <211> 172  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 382  
 Met Leu Pro Gly Phe Asn Arg Ile Phe Lys Arg Phe Ala Pro Thr Leu  
 1 5 10 15  
 Gly Thr Ala His Lys Thr Pro Pro Phe Ala Leu Ser Arg Thr Gly Arg  
 20 25 30  
 Leu Ile Arg Ser Tyr Arg His Lys Arg Arg Gly Phe Asn Arg Lys Gly  
 35 40 45  
 Ile Glu Met Asn Lys Thr Leu Ser Ile Leu Pro Ala Ala Ile Leu Leu  
 50 55 60  
 Gly Gly Cys Ala Ala Gly Gly Asn Thr Phe Gly Ser Leu Asp Gly Gly  
 65 70 75 80  
 Thr Gly Met Gly Gly Ser Ile Val Lys Met Thr Val Glu Ser Gln Cys  
 85 90 95  
 Arg Ala Glu Leu Asp Arg Arg Ser Glu Trp Arg Leu Thr Ala Leu Ala  
 100 105 110  
 Met Ser Ala Glu Lys Gln Ala Glu Trp Glu Asn Lys Ile Cys Gly Cys  
 115 120 125  
 Ala Thr Glu Glu Ala Pro Asn Gln Leu Thr Gly Asn Asp Val Met Gln  
 130 135 140  
 Met Leu Asn Gln Ser Thr Arg Asn Gln Ala Leu Ala Ala Leu Thr Val  
 145 150 155 160  
 Lys Thr Val Ser Ala Cys Phe Lys Arg Leu Tyr Arg  
 165 170

<210> 383  
 <211> 522  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 383  
 atgttgccgg gcttcaaccg gatattcaaa cgttttggtc caacactcgg aacggcgcat 60  
 aaaacgccgc cttcgcggtt atcccgaacg ggcgggctaa tcagattcta tcgccataaa 120  
 aggcgggggtt tcaaccgaaa aggaattgag atgaataaaa cttgtcttat tttgccgggtg 180  
 gcaatcttac tcggcggctg cgccgcggga ggcggtaaca cattcggcag cttagacggt 240  
 ggcacaggca tgggcggcag catcgtcaaa atggcgggtg ggagccaatg ccgtgcggaa 300  
 ttggacaaac gcagcgaatg gcgtttgacc gcgctggcga tgagtgccga aaaacaggcg 360  
 gagtgggaaa acaagatttg cgcttgctgc gcccaagaag caccggaacg gatgaccggc 420  
 aacgatgtga tgcagatgct ggctccgtcc acgcgcaatc aggcaattgc cgcoctgacc 480  
 gccaaaacgg tttccgcctg cttcaaacac ctgtaccgct aa 522

<210> 384  
 <211> 173  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 384  
 Met Leu Pro Gly Phe Asn Arg Ile Phe Lys Arg Phe Val Pro Thr Leu  
 1 5 10 15  
 Gly Thr Ala His Lys Thr Pro Pro Phe Ala Leu Ser Arg Thr Gly Arg  
 20 25 30  
 Leu Ile Arg Phe Tyr Arg His Lys Arg Arg Gly Phe Asn Arg Lys Gly  
 35 40 45  
 Ile Glu Met Asn Lys Thr Leu Ser Ile Leu Pro Val Ala Ile Leu Leu  
 50 55 60  
 Gly Gly Cys Ala Ala Gly Gly Gly Asn Thr Phe Gly Ser Leu Asp Gly  
 65 70 75 80  
 Gly Thr Gly Met Gly Gly Ser Ile Val Lys Met Ala Val Gly Ser Gln  
 85 90 95  
 Cys Arg Ala Glu Leu Asp Lys Arg Ser Glu Trp Arg Leu Thr Ala Leu  
 100 105 110  
 Ala Met Ser Ala Glu Lys Gln Ala Glu Trp Glu Asn Lys Ile Cys Ala  
 115 120 125  
 Cys Val Ala Gln Glu Ala Pro Glu Arg Met Thr Gly Asn Asp Val Met  
 130 135 140  
 Gln Met Leu Ala Pro Ser Thr Arg Asn Gln Ala Leu Ala Ala Leu Thr  
 145 150 155 160  
 Ala Lys Thr Val Ser Ala Cys Phe Lys His Leu Tyr Arg  
 165 170

<210> 385  
 <211> 522  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 385  
 atgttgccgg gcttcaaccg gatattcaaaa cggtttgttc caacactcgg aacggcgcat 60  
 aaaacgccgc ctttcgcgtt atcccgaaacg gggcggtctaa tcagattcta tcgccataaa 120  
 agggcggggtt tcaaccgaaa aggaattgag atgaataaaa ctttgtctat tttgccgggtg 180  
 gcaatcttac tcggcggtcgc cgccgcccggg ggcggtaaca cattcggcag cttagacggc 240  
 ggcacaggta tgggcggcag catcgtcaaa atggcggttag aaagccaatg ccgtgcggaa 300  
 ttgaacaaac gcagcgaatg gcgtttgacc gcgctggcga tgagtgccga aaaacaggcg 360  
 gaatgggaaa acaagatttg cgcttgcgtc gccaagaag caccaacca gctgaccggc 420  
 aacgatgtga tgcagatgct ggatccgtcc accgcgaatc aggcaattgc cgccctgacc 480  
 gccaaaacgg tttccgcctg cttcaaacac ctgtaccgct aa 522

<210> 386  
<211> 173  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 386  
Met Leu Pro Gly Phe Asn Arg Ile Phe Lys Arg Phe Val Pro Thr Leu  
1 5 10 15  
Gly Thr Ala His Lys Thr Pro Pro Phe Ala Leu Ser Arg Thr Gly Arg  
20 25 30  
Leu Ile Arg Phe Tyr Arg His Lys Arg Arg Gly Phe Asn Arg Lys Gly  
35 40 45  
Ile Glu Met Asn Lys Thr Leu Ser Ile Leu Pro Val Ala Ile Leu Leu  
50 55 60  
Gly Gly Cys Ala Ala Gly Gly Gly Asn Thr Phe Gly Ser Leu Asp Gly  
65 70 75 80  
Gly Thr Gly Met Gly Gly Ser Ile Val Lys Met Ala Val Glu Ser Gln  
85 90 95  
Cys Arg Ala Glu Leu Asn Lys Arg Ser Glu Trp Arg Leu Thr Ala Leu  
100 105 110  
Ala Met Ser Ala Glu Lys Gln Ala Glu Trp Glu Asn Lys Ile Cys Ala  
115 120 125  
Cys Val Ala Gln Glu Ala Pro Asn Gln Leu Thr Gly Asn Asp Val Met  
130 135 140  
Gln Met Leu Asp Pro Ser Thr Arg Asn Gln Ala Leu Ala Ala Leu Thr  
145 150 155 160  
Ala Lys Thr Val Ser Ala Cys Phe Lys His Leu Tyr Arg  
165 170

<210> 387  
<211> 369  
<212> DNA  
<213> *Neisseria gonorrhoeae*

<400> 387  
atgtattatc gccgggttgt ggggctatcc gatggacttg gcgatttggc agccgggtatt 60  
gatcgtaggc gtatgcttac cgcttttggg agcgggcatg gaaatgacgc gcaaaggcaa 120  
aaccacccaa tccgcgcgca tcgtggtgtt ctcttcgcgc tgggtcaatcc ggttttcggc 180  
tgggcgttga cgatgctgtt ggataatttg ggcttaatcg gctgcaaaga acgcagcgcg 240  
caattaggtt ttgtcggacg agtattgata cccgcagtag gtttcttaat cttgtgtgtg 300  
gcgatgggtg cggtcgggat gctgcccggt atccctcgt ttttgagca gttcaaattc 360  
ttgggctag 369

<210> 388

<211> 122  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 388  
 Met Tyr Tyr Arg Arg Val Val Gly Leu Ser Asp Gly Leu Gly Asp Leu  
   1                  5                  10                  15  
 Ala Ala Gly Ile Asp Arg Arg Arg Met Leu Thr Ala Phe Gly Ser Gly  
           20                  25                  30  
 His Gly Asn Asp Ala Gln Arg Gln Asn His Pro Ile Arg Arg His Arg  
           35                  40                  45  
 Gly Val Leu Phe Arg Leu Val Asn Pro Val Phe Gly Trp Ala Leu Thr  
       50                  55                  60  
 Met Leu Leu Asp Asn Leu Gly Leu Ile Gly Cys Lys Glu Arg Ser Ala  
       65                  70                  75                  80  
 Gln Leu Gly Phe Val Gly Arg Val Leu Ile Pro Ala Val Gly Phe Leu  
                   85                  90                  95  
 Ile Leu Cys Val Ala Met Gly Ala Val Gly Met Leu Pro Gly Ile Pro  
           100                  105                  110  
 Pro Phe Leu Glu Gln Phe Lys Ser Leu Gly  
       115                  120

<210> 389  
 <211> 381  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 389  
 atgtattatc gccgggttat ggggctatcc gatggacttg gcgatttggc agccgggtatt 60  
 gagcgtagcc ttggtcgtag gcgtatactt accgcttttg gaagcgggca tggaaatgac 120  
 gcgcaaagc aaaaccaccc aatccgcgc catcggtgtg ttctcttcg ccttgtcaat 180  
 ccggttttcg gctgggcgtt gacgatgctg ttggataatt tgggcttaat cggttgcaaa 240  
 gagcgagtg cgcaattagg ttctgccgga cgcgtgttga taccgcagc aggtttcttg 300  
 atcttgtgtg tggcgatggg tgcggtcggg atgctgcccg gtatcccgcc gtttttggaa 360  
 cacttcaaat ctttgggcta g 381

<210> 390  
 <211> 126  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 390  
 Met Tyr Tyr Arg Arg Val Met Gly Leu Ser Asp Gly Leu Gly Asp Leu  
   1                  5                  10                  15  
 Ala Ala Gly Ile Glu Arg Ser Leu Gly Arg Arg Arg Ile Leu Thr Ala  
       20                  25                  30

Phe Gly Ser Gly His Gly Asn Asp Ala Gln Arg Gln Asn His Pro Ile  
35 40 45

Arg Arg His Arg Gly Val Leu Phe Arg Leu Val Asn Pro Val Phe Gly  
50 55 60

Trp Ala Leu Thr Met Leu Leu Asp Asn Leu Gly Leu Ile Gly Cys Lys  
65 70 75 80

Glu Arg Ser Ala Gln Leu Gly Phe Ala Gly Arg Val Leu Ile Pro Ala  
85 90 95

Val Gly Phe Leu Ile Leu Cys Val Ala Met Gly Ala Val Gly Met Leu  
100 105 110

Pro Gly Ile Pro Pro Phe Leu Glu His Phe Lys Ser Leu Gly  
115 120 125

<210> 391

<211> 381

<212> DNA

<213> Neisseria meningitidis

<400> 391

atgtattatc gccgggttgt ggggctatcc gatggacttg gcgatttggc agccggtatt 60  
gagcgtagcc ttggtcgtag gcgtatactt accgcttttg gaagcgggca tggaaatgac 120  
gcgcaaaggc aaaaccaccc aatccgcgc caccgtggtg ttctcttccg cttggtcaat 180  
ccggttttcg gctgggcgtt gacgatgctg ttggataatt tgggcttaat cggctgcaaa 240  
gagcgcagcg cgcaattagg ttccaccgga cgcgtattga taccgtagt aggtttcttg 300  
atcttgtgtg tggcgatggg tgcggtcggg atgctgcccg gtatcccgcc gtttttgag 360  
cacttcaaat ctttgggcta g 381

<210> 392

<211> 126

<212> PRT

<213> Neisseria meningitidis

<400> 392

Met Tyr Tyr Arg Arg Val Val Gly Leu Ser Asp Gly Leu Gly Asp Leu  
1 5 10 15

Ala Ala Gly Ile Glu Arg Ser Leu Gly Arg Arg Arg Ile Leu Thr Ala  
20 25 30

Phe Gly Ser Gly His Gly Asn Asp Ala Gln Arg Gln Asn His Pro Ile  
35 40 45

Arg Arg His Arg Gly Val Leu Phe Arg Leu Val Asn Pro Val Phe Gly  
50 55 60

Trp Ala Leu Thr Met Leu Leu Asp Asn Leu Gly Leu Ile Gly Cys Lys  
65 70 75 80

Glu Arg Ser Ala Gln Leu Gly Phe Thr Gly Arg Val Leu Ile Pro Val  
85 90 95

Val Gly Phe Leu Ile Leu Cys Val Ala Met Gly Ala Val Gly Met Leu  
100 105 110

Pro Gly Ile Pro Pro Phe Leu Glu His Phe Lys Ser Leu Gly  
115 120 125

<210> 393

<211> 372

<212> DNA

<213> Neisseria gonorrhoeae

<400> 393

atgcggtctg aaacacgcct gccgaacctt atccgcgcct tgatatttgc cctgggtttc 60  
atcttcctga acgcctgttc ggaacaaacc gcgcaaaccg ttaccctgca aggcgaaacg 120  
atgggtacga cctataccgt caaatacctt tcaaataatc gggacaaact cccctccct 180  
gccaaaatac aaaagcgcat tgatgatgcg cttaaagaag tcaaccggca gatgtccacc 240  
taccagaccg attccgaaat cagccggttt atacagacan atgctggaga gctcttcgcg 300  
tntcatgcag nttctataac tgattccgcc gaagactgtc tgcctaatac gcctatctca 360  
tcggcgctct ga 372

<210> 394

<211> 120

<212> PRT

<213> Neisseria gonorrhoeae

<400> 394

Met Pro Ser Glu Thr Arg Leu Pro Asn Leu Ile Arg Ala Leu Ile Phe  
1 5 10 15

Ala Leu Gly Phe Ile Phe Leu Asn Ala Cys Ser Glu Gln Thr Ala Gln  
20 25 30

Thr Val Thr Leu Gln Gly Glu Thr Met Gly Thr Thr Tyr Thr Val Lys  
35 40 45

Tyr Leu Ser Asn Asn Arg Asp Lys Leu Pro Ser Pro Ala Lys Ile Gln  
50 55 60

Lys Arg Ile Asp Asp Ala Leu Lys Glu Val Asn Arg Gln Met Ser Thr  
65 70 75 80

Tyr Gln Thr Asp Ser Glu Ile Ser Arg Phe Ile Gln Thr Ala Gly Glu  
85 90 95

Leu Phe Ala His Ala Ser Ile Thr Asp Ser Ala Glu Asp Cys Leu Pro  
100 105 110

Asn Thr Pro Ile Ser Ser Ala Leu  
115 120

<210> 395

<211> 1056

<212> DNA



<213> Neisseria meningitidis

<400> 395

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atgccgtctg aaacacgcct gccgaacttt atccgcgtct tgatatttgc cctgggtttc 60
atcttcctga acgcctgttc ggaacaaacc gcgcaaaccg ttaccctgca aggcgaaacg 120
atgggcacga cctataycgt caaatacctt tcaaataatc gggacaaact cccctcacct 180
gccgaaatac awaaacgcat cgatgacgcg cttaaagaak tcaaccggya gatgtccacc 240
tatcagcccg actccgaaat cagccggttc aaccaacaca cagccggcaa gcccctccgc 300
atttcaagcg acttcgcaca cgttactgcc gaagccgtcc gcctgaaccg cctgacacac 360
ggcgcgctgg acgtaaccgt cggccccttg gtcaaccttt ggggattcgg ccccgacaaa 420
tccgttaccg gtgaaccgtc gccggaacaa atcaaacagg cggcatctta tacgggcata 480
gacaaaatca ttttgaaaca aggcaaagat tacgcttcct tgagcaaaac ccacccaag 540
gcctatttgg atttatcttc gattgccaaa ggcttcggcg ttgataaagt tgcgggcgaa 600
ctggaaaaat acggcattca aaattatctg gtcgaaatcg gcggcgagtt gcacggcaaa 660
ggcaaaaacg cgcgcggcga accgtggcgc atcggtatcg agcagcccaa tatcgtccaa 720
ggcggcaata cgcagattat cgtcccgtcg aacaaccgtt cgcttgccac ttccggcgat 780
taccgtattt tccacgtcga taaaaacggc aaacgcctct cccatatcat caaccgaac 840
aacaacgac ccacagcca caacctcgcc tccatcagcg tggtcgcaga cagtgcgatg 900
acggcggacg cgttgccac aggattatc gtattggcg aaacogaagc cttaaagctg 960
gcagcgcg aaaaactcgc tgttttcctg attgtcaggg ataaaggcgg ctaccgcacc 1020
gccatgtctt ccgaatttga aaaactgctc cgctaa 1056
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<210> 396

<211> 351

<212> PRT

<213> Neisseria meningitidis

<400> 396

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Met Pro Ser Glu Thr Arg Leu Pro Asn Phe Ile Arg Val Leu Ile Phe
 1             5             10             15

Ala Leu Gly Phe Ile Phe Leu Asn Ala Cys Ser Glu Gln Thr Ala Gln
 20             25             30

Thr Val Thr Leu Gln Gly Glu Thr Met Gly Thr Thr Tyr Xaa Val Lys
 35             40             45

Tyr Leu Ser Asn Asn Arg Asp Lys Leu Pro Ser Pro Ala Glu Ile Xaa
 50             55             60

Lys Arg Ile Asp Asp Ala Leu Lys Glu Xaa Asn Arg Xaa Met Ser Thr
 65             70             75             80

Tyr Gln Pro Asp Ser Glu Ile Ser Arg Phe Asn Gln His Thr Ala Gly
 85             90             95

Lys Pro Leu Arg Ile Ser Ser Asp Phe Ala His Val Thr Ala Glu Ala
100             105             110

Val Arg Leu Asn Arg Leu Thr His Gly Ala Leu Asp Val Thr Val Gly
115             120             125

Pro Leu Val Asn Leu Trp Gly Phe Gly Pro Asp Lys Ser Val Thr Arg
130             135             140

Glu Pro Ser Pro Glu Gln Ile Lys Gln Ala Ala Ser Tyr Thr Gly Ile
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145		150		155		160
Asp Lys Ile Ile Leu Lys Gln Gly Lys Asp Tyr Ala Ser Leu Ser Lys						
	165			170		175
Thr His Pro Lys Ala Tyr Leu Asp Leu Ser Ser Ile Ala Lys Gly Phe						
	180			185		190
Gly Val Asp Lys Val Ala Gly Glu Leu Glu Lys Tyr Gly Ile Gln Asn						
	195			200		205
Tyr Leu Val Glu Ile Gly Gly Glu Leu His Gly Lys Gly Lys Asn Ala						
	210			215		220
Arg Gly Glu Pro Trp Arg Ile Gly Ile Glu Gln Pro Asn Ile Val Gln						
	225			230		235
Gly Gly Asn Thr Gln Ile Ile Val Pro Leu Asn Asn Arg Ser Leu Ala						
	245			250		255
Thr Ser Gly Asp Tyr Arg Ile Phe His Val Asp Lys Asn Gly Lys Arg						
	260			265		270
Leu Ser His Ile Ile Asn Pro Asn Asn Lys Arg Pro Ile Ser His Asn						
	275			280		285
Leu Ala Ser Ile Ser Val Val Ala Asp Ser Ala Met Thr Ala Asp Gly						
	290			295		300
Leu Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Lys Leu						
	305			310		315
Ala Glu Arg Glu Lys Leu Ala Val Phe Leu Ile Val Arg Asp Lys Gly						
	325			330		335
Gly Tyr Arg Thr Ala Met Ser Ser Glu Phe Glu Lys Leu Leu Arg						
	340			345		350

<210> 397

<211> 1056

<212> DNA

<213> Neisseria meningitidis

<400> 397

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atgccgtctg aaacacgcct gccgaacttt atccgcacct tgatatttgc cctgagtttt 60
atcttcctga acgcctgttc ggaacaaacc gcgcaaaccg ttaccctgca aggtgaaacg 120
atgggcacga cctataccgt caaatacctt tcaaataatc gggacaaact cccctcacct 180
gccgaaatac aaaagcgcat cgatgacgcg cttaaagaag tcaaccggca gatgtccacc 240
tatcagcccg actccgaaat cagccggttc aaccaacaca cagccggcaa gccctccgc 300
atttcaagcg acttcgcaca cgttactgcc gaagccgtcc acctgaaccg cctgacacac 360
ggcgcgctgg acgtaaccgt cggccccctg gtcaaccttt ggggattcgg ccccgacaaa 420
tccgttaccg gtgaaccgtc gccggaacaa atcaaacaag cagcatctta tacgggcata 480
gacaaaatca ttttgaaaca aggcaaagat tacgcttcct tgagcaaaac ccacccaag 540
gcctatttgg atttatcttc gattgccaaa ggcttcggcg ttgataaagt tgcgggcgaa 600
ctggaaaaat acggcattca aaattatctg gtcgaaatcg gcggcgagtt gcacggcaaa 660
ggcaaaaaacg cgcgcggcga accttggcgc atcggcatcg aacagcccaa catcgtccaa 720

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ggcgggcaata cgcagattat cgtcccgcgtg aacaaccggt cgtttgccac ttccggcgat 780
taccgtattt tccacgtcga taaaagcggc aaacgcctct cccatatcat taatccgaac 840
aacaaacgac ccatcagcca caacctcgcc tccatcagcg tggtcgcaga cagtgcgatg 900
acggcggacg gcttgtccac aggattattc gtattgggcg aaaccgaagc cttaaagctg 960
gcagagcgcg aaaaactcgc tgttttcctg attgtcaggg ataaaggcgg ctaccgcacc 1020
gccatgtctt ccgaatttga aaaactgctc cgctaa 1056

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<210> 398

<211> 351

<212> PRT

<213> *Neisseria meningitidis*

<400> 398

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Met Pro Ser Glu Thr Arg Leu Pro Asn Phe Ile Arg Thr Leu Ile Phe
 1          5          10          15

Ala Leu Ser Phe Ile Phe Leu Asn Ala Cys Ser Glu Gln Thr Ala Gln
      20          25          30

Thr Val Thr Leu Gln Gly Glu Thr Met Gly Thr Thr Tyr Thr Val Lys
      35          40          45

Tyr Leu Ser Asn Asn Arg Asp Lys Leu Pro Ser Pro Ala Glu Ile Gln
      50          55          60

Lys Arg Ile Asp Asp Ala Leu Lys Glu Val Asn Arg Gln Met Ser Thr
      65          70          75          80

Tyr Gln Pro Asp Ser Glu Ile Ser Arg Phe Asn Gln His Thr Ala Gly
      85          90          95

Lys Pro Leu Arg Ile Ser Ser Asp Phe Ala His Val Thr Ala Glu Ala
      100          105          110

Val His Leu Asn Arg Leu Thr His Gly Ala Leu Asp Val Thr Val Gly
      115          120          125

Pro Leu Val Asn Leu Trp Gly Phe Gly Pro Asp Lys Ser Val Thr Arg
      130          135          140

Glu Pro Ser Pro Glu Gln Ile Lys Gln Ala Ala Ser Tyr Thr Gly Ile
      145          150          155          160

Asp Lys Ile Ile Leu Lys Gln Gly Lys Asp Tyr Ala Ser Leu Ser Lys
      165          170          175

Thr His Pro Lys Ala Tyr Leu Asp Leu Ser Ser Ile Ala Lys Gly Phe
      180          185          190

Gly Val Asp Lys Val Ala Gly Glu Leu Glu Lys Tyr Gly Ile Gln Asn
      195          200          205

Tyr Leu Val Glu Ile Gly Gly Glu Leu His Gly Lys Gly Lys Asn Ala
      210          215          220

Arg Gly Glu Pro Trp Arg Ile Gly Ile Glu Gln Pro Asn Ile Val Gln

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225		230		235		240
Gly Gly Asn Thr	Gln Ile Ile Val	Pro Leu Asn Asn Arg	Ser Leu Ala			
	245	250	255			
Thr Ser Gly Asp Tyr Arg Ile Phe His Val Asp Lys Ser Gly Lys Arg						
	260	265	270			
Leu Ser His Ile Ile Asn Pro Asn Asn Lys Arg Pro Ile Ser His Asn						
	275	280	285			
Leu Ala Ser Ile Ser Val Val Ala Asp Ser Ala Met Thr Ala Asp Gly						
	290	295	300			
Leu Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Lys Leu						
305	310	315	320			
Ala Glu Arg Glu Lys Leu Ala Val Phe Leu Ile Val Arg Asp Lys Gly						
	325	330	335			
Gly Tyr Arg Thr Ala Met Ser Ser Glu Phe Glu Lys Leu Leu Arg						
	340	345	350			

<210> 399  
 <211> 1056  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 399  
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 atgggtacga cctataccgt caaataacct tcaaataatc gggacaaaact cccctccct 180  
 gccaaaatac aaaagcgcac tgatgatgag cttaaagaag tcaaccggca gatgtccacc 240  
 taccagaccg attccgaaat cagccgggtc aaccaacaca cagccggcaa gccctccgc 300  
 atttcaagcg atttcgcaca cgttaccgcc gaagccgtcc gcctgaaccg cctgactcac 360  
 ggcgcactgg acgtaaccgt cggccctttg gtcaaccttt ggggggttcg ccccgacaaa 420  
 tccgttaccg gtgaaccgtc gccggaacaa atcaaacagg cggcatctta tacgggcata 480  
 gacaaaatca ttttgcaaca aggcaaagat tacgcttcct tgagcaaaac ccaccccaaa 540  
 gcctatttgg atttatcttc gattgcaaaa ggcttcggcg ttgataaagt tgcggggcga 600  
 ctggaaaaat acggcattca aaattatctg gtcgaaatcg gcggcgagtt gcacggcaaa 660  
 ggcaaaaatg cgcacggcga accgtggcgc atcggtatag agcaaccctaa tatcatccaa 720  
 ggcggaataa cgcagattat cgtcccgtg aacaaccgtt cgcttgccac ttccggcgat 780  
 taccgtatct tccacgtcga taaaaacggc aaacgccttt cccacatcat caatcccaac 840  
 aacaaacgac ccatcagcca caacctcgcc tccatcagcg tggctctcaga cagtgcgaatg 900  
 acggcggacg gtttatccac aggattatct gttttaggcg aaaccgaagc cttaaggctg 960  
 gcagaacaag aaaaactcgc tgttttccta attgtccggg ataaggacgg ctaccgcacc 1020  
 gccatgtctt ccgaatttgc caagctgctc cgctaa 1056

<210> 400  
 <211> 351  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 400  
 Met Pro Ser Glu Thr Arg Leu Pro Asn Leu Ile Arg Ala Leu Ile Phe

1	5	10	15
Ala Leu Gly Phe Ile Phe Leu Asn Ala Cys Ser Glu Gln Thr Ala Gln	20	25	30
Thr Val Thr Leu Gln Gly Glu Thr Met Gly Thr Thr Tyr Thr Val Lys	35	40	45
Tyr Leu Ser Asn Asn Arg Asp Lys Leu Pro Ser Pro Ala Lys Ile Gln	50	55	60
Lys Arg Ile Asp Asp Ala Leu Lys Glu Val Asn Arg Gln Met Ser Thr	65	70	75
Tyr Gln Thr Asp Ser Glu Ile Ser Arg Phe Asn Gln His Thr Ala Gly	85	90	95
Lys Pro Leu Arg Ile Ser Ser Asp Phe Ala His Val Thr Ala Glu Ala	100	105	110
Val Arg Leu Asn Arg Leu Thr His Gly Ala Leu Asp Val Thr Val Gly	115	120	125
Pro Leu Val Asn Leu Trp Gly Phe Gly Pro Asp Lys Ser Val Thr Arg	130	135	140
Glu Pro Ser Pro Glu Gln Ile Lys Gln Ala Ala Ser Tyr Thr Gly Ile	145	150	155
Asp Lys Ile Ile Leu Gln Gln Gly Lys Asp Tyr Ala Ser Leu Ser Lys	165	170	175
Thr His Pro Lys Ala Tyr Leu Asp Leu Ser Ser Ile Ala Lys Gly Phe	180	185	190
Gly Val Asp Lys Val Ala Gly Glu Leu Glu Lys Tyr Gly Ile Gln Asn	195	200	205
Tyr Leu Val Glu Ile Gly Gly Glu Leu His Gly Lys Gly Lys Asn Ala	210	215	220
His Gly Glu Pro Trp Arg Ile Gly Ile Glu Gln Pro Asn Ile Ile Gln	225	230	235
Gly Gly Asn Thr Gln Ile Ile Val Pro Leu Asn Asn Arg Ser Leu Ala	245	250	255
Thr Ser Gly Asp Tyr Arg Ile Phe His Val Asp Lys Asn Gly Lys Arg	260	265	270
Leu Ser His Ile Ile Asn Pro Asn Asn Lys Arg Pro Ile Ser His Asn	275	280	285
Leu Ala Ser Ile Ser Val Val Ser Asp Ser Ala Met Thr Ala Asp Gly	290	295	300
Leu Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Arg Leu			



85

90

95

Lys Pro Leu Arg Ile Ser Ser Asp Phe Ala His Val Thr Ala Glu Ala  
 100 105 110

Val Arg Leu Asn Arg Leu Thr His Gly Ala Leu Asp Val Thr Val Gly  
 115 120 125

Pro Leu Val Asn Leu Trp Gly Phe Gly Pro Asp Lys Ser Val Thr Arg  
 130 135 140

Glu Pro Ser Pro Glu Gln Ile Lys Gln Ala Ala Ser Tyr Thr Gly Ile  
 145 150 155 160

Asp Lys Ile Ile Leu Lys Gln Gly Lys Asp Tyr Ala Ser Leu Ser Lys  
 165 170 175

Thr His Pro Lys Ala Tyr Leu Asp Leu Ser Ser Ile Ala Lys Gly Phe  
 180 185 190

Gly Val Asp Lys Val Ala Gly Glu Leu Glu Lys Tyr Gly Ile Gln Asn  
 195 200 205

Tyr Leu Val Glu Ile Gly Gly Glu Leu His Gly Lys Gly Lys Asn Ala  
 210 215 220

Arg Gly Glu Pro Trp Arg Ile Gly Ile Glu Gln Pro Asn Ile Val Gln  
 225 230 235 240

Gly Gly Asn Thr Gln Ile Ile Val Pro Leu Asn Asn Arg Ser Leu Ala  
 245 250 255

Thr Ser Gly Asp Tyr Arg Ile Phe His Val Asp Lys Asn Gly Lys Arg  
 260 265 270

Leu Ser His Ile Ile Asn Pro Asn Asn Lys Arg Pro Ile Ser His Asn  
 275 280 285

Leu Ala Ser Ile Ser Val Val Ala Asp Ser Ala Met Thr Ala Asp Gly  
 290 295 300

Leu Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Lys Leu  
 305 310 315 320

Ala Glu Arg Glu Lys Leu Ala Val Phe Leu Ile Val Arg Asp Lys Gly  
 325 330 335

Gly Tyr Arg Thr Ala Met Ser Ser Glu Phe Glu Lys Leu Leu Arg  
 340 345 350

&lt;210&gt; 403

&lt;211&gt; 1056

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

<400> 403

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atcttcctga acgcctgttc ggaacaaacc gcgcaaaccg ttaccctgca aggtgaaacg 120
atgggcacga cctataccgt caaataccct tcaaataatc gggacaaaact cccctcacct 180
gccgaaatac aaaagcgcat cgatgacgcg cttaaagaag tcaaccggca gatgtccacc 240
tatcagcccg actccgaaat cagccggttc aaccaacaca cagccggcaa gcccctccgc 300
atttcaagcg acttcgcaca cgttactgcc gaagccgtcc acctgaaccg cctgacacac 360
ggcgcgctgg acgtaaccgt cggccccttg gtcaaccttt ggggattcgg ccccgacaaa 420
tccgttaccg gtgaaccgtc gccggaacaa atcaaacaag cagcatctta tacgggcata 480
gacaaaatca ttttgaaaca aggcaaagat tacgcttctt tgagcaaaac ccacccaag 540
gcctatttgg atttatcttc gattgccaaa ggcttcggcg ttgataaagt tgcgggcgaa 600
ctggaaaaat acggcattca aaattatctg gtcgaaatcg gcggcgagtt gcacggcaaa 660
ggcaaaaacg cgcgcggcga accttggcgc atcggcatcg aacagcccaa catcgtccaa 720
ggcggcaata cgcagattat cgtcccgcgt aacaaccggt cgcttgccac ttccggcgat 780
taccgtatth tccacgtcga taaaagcggc aaacgcctct cccatatcat taatccgaac 840
aacaaacgac ccacagcca caacctcgcc tccatcagcg tggtcgcaga cagtgcgatg 900
acggcggacg gcttgtccac aggattattc gtattgggcg aaaccgaagc cttaaagctg 960
gcagagcgcg aaaaactcgc tgttttcctg attgtcaggg ataaaggcgg ctaccgcacc 1020
gccatgtctt ccgaatttga aaaactgctc cgctaa 1056
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<210> 404

<211> 351

<212> PRT

<213> Neisseria meningitidis

<400> 404

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Met Pro Ser Glu Thr Arg Leu Pro Asn Phe Ile Arg Thr Leu Ile Phe
  1                      5                      10                     15
```

```
Ala Leu Ser Phe Ile Phe Leu Asn Ala Cys Ser Glu Gln Thr Ala Gln
  20                      25                     30
```

```
Thr Val Thr Leu Gln Gly Glu Thr Met Gly Thr Thr Tyr Thr Val Lys
  35                      40                     45
```

```
Tyr Leu Ser Asn Asn Arg Asp Lys Leu Pro Ser Pro Ala Glu Ile Gln
  50                      55                     60
```

```
Lys Arg Ile Asp Asp Ala Leu Lys Glu Val Asn Arg Gln Met Ser Thr
  65                      70                     75                     80
```

```
Tyr Gln Pro Asp Ser Glu Ile Ser Arg Phe Asn Gln His Thr Ala Gly
  85                      90                     95
```

```
Lys Pro Leu Arg Ile Ser Ser Asp Phe Ala His Val Thr Ala Glu Ala
  100                     105                    110
```

```
Val His Leu Asn Arg Leu Thr His Gly Ala Leu Asp Val Thr Val Gly
  115                     120                    125
```

```
Pro Leu Val Asn Leu Trp Gly Phe Gly Pro Asp Lys Ser Val Thr Arg
  130                     135                    140
```

```
Glu Pro Ser Pro Glu Gln Ile Lys Gln Ala Ala Ser Tyr Thr Gly Ile
  145                     150                    155                    160
```



Asp Lys Ile Ile Leu Lys Gln Gly Lys Asp Tyr Ala Ser Leu Ser Lys  
 165 170 175  
 Thr His Pro Lys Ala Tyr Leu Asp Leu Ser Ser Ile Ala Lys Gly Phe  
 180 185 190  
 Gly Val Asp Lys Val Ala Gly Glu Leu Glu Lys Tyr Gly Ile Gln Asn  
 195 200 205  
 Tyr Leu Val Glu Ile Gly Gly Glu Leu His Gly Lys Gly Lys Asn Ala  
 210 215 220  
 Arg Gly Glu Pro Trp Arg Ile Gly Ile Glu Gln Pro Asn Ile Val Gln  
 225 230 235 240  
 Gly Gly Asn Thr Gln Ile Ile Val Pro Leu Asn Asn Arg Ser Leu Ala  
 245 250 255  
 Thr Ser Gly Asp Tyr Arg Ile Phe His Val Asp Lys Ser Gly Lys Arg  
 260 265 270  
 Leu Ser His Ile Ile Asn Pro Asn Asn Lys Arg Pro Ile Ser His Asn  
 275 280 285  
 Leu Ala Ser Ile Ser Val Val Ala Asp Ser Ala Met Thr Ala Asp Gly  
 290 295 300  
 Leu Ser Thr Gly Leu Phe Val Leu Gly Glu Thr Glu Ala Leu Lys Leu  
 305 310 315 320  
 Ala Glu Arg Glu Lys Leu Ala Val Phe Leu Ile Val Arg Asp Lys Gly  
 325 330 335  
 Gly Tyr Arg Thr Ala Met Ser Ser Glu Phe Glu Lys Leu Leu Arg  
 340 345 350

<210> 405

<211> 423

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 405

atggcttcca tcacttcgcc gctgcacggg gcgcagcagg aatgcagcaa gactttttta 60  
 tgtccgccgg gcgggacgag tatggggcgg tcaatgtcgg taacggtagg tttgttttgt 120  
 gtttccatta acttaacaat atctgtcgaa tacggtcaaa gcggctatatt taccagagcc 180  
 gccgaatgta aaacagggtg tcagggcatc agcccagagct gcctgaacga acggacgggtt 240  
 tgcgaggtaa cgataaaatg gtcgagcagc gaaacatcaa ccagcgacat ggcctgtgcc 300  
 agccgccttg tgaacatgat gtcttcctgc gaaggttcag gcgagccgcc cggatgggtg 360  
 tgcgcgataa tcaggctgtc ggcataattcg tccaatgcc a gtttgacgat ttcgcggatg 420  
 taa 423

<210> 406

<211> 140

<212> PRT

<213> Neisseria gonorrhoeae

<400> 406

```
Met Ala Ser Ile Thr Ser Pro Leu His Gly Ala Gln Gln Glu Cys Ser
  1             5             10             15

Lys Thr Phe Leu Cys Pro Pro Gly Gly Thr Ser Met Gly Arg Ser Met
          20             25             30

Ser Val Thr Val Gly Leu Phe Cys Val Ser Ile Asn Leu Thr Ile Ser
          35             40             45

Val Glu Tyr Gly Gln Ser Gly Tyr Phe Thr Arg Ala Ala Glu Cys Lys
          50             55             60

Thr Gly Cys Gln Gly Ile Ser Pro Ser Cys Leu Asn Glu Arg Thr Val
          65             70             75             80

Cys Glu Val Thr Ile Lys Trp Ser Ser Ser Glu Thr Ser Thr Ser Asp
          85             90             95

Met Ala Cys Ala Ser Arg Leu Val Asn Met Met Ser Ser Cys Glu Gly
          100            105            110

Ser Gly Glu Pro Pro Gly Trp Leu Cys Ala Ile Ile Arg Leu Ser Ala
          115            120            125

Tyr Ser Ser Asn Ala Ser Leu Thr Ile Ser Arg Met
          130            135            140
```

<210> 407

<211> 423

<212> DNA

<213> Neisseria meningitidis

<400> 407

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atggcttcca tcacttcgcc gctgcacggg gcgcacagag aatgcagcaa gactttttta 60
tgtccaccgg gcgggacgag tatagggcgg tcaatgtcgg taacggtagg tttgttttgt 120
gtttccatta acttaacaat atctgttgaa tacggttgaa gcggctatgt tatcagagcc 180
gccgcatgta aaacagagtg tcagggcatc aacccgagct gtctgaacga acagacgctt 240
tgcgakgtaa cgataaaatg gtcgagcagc gacacatcga ccagcgacat tgctgtgcc 300
agccgccttg tgaacatgat gtcttcctgc gaargttcsg gcgagccgcc cggatggttg 360
tgcgcaataa tcaggctgtc ggcatattcg tccaatgcca gtttgacgat ttcgcgggatg 420
taa                                                    423
```

<210> 408

<211> 140

<212> PRT

<213> Neisseria meningitidis

<400> 408

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Met Ala Ser Ile Thr Ser Pro Leu His Gly Ala His Arg Glu Cys Ser
  1             5             10             15

Lys Thr Phe Leu Cys Pro Pro Gly Gly Thr Ser Ile Gly Arg Ser Met
```

20                      25                      30  
 Ser Val Thr Val Gly Leu Phe Cys Val Ser Ile Asn Leu Thr Ile Ser  
                     35                      40                      45  
 Val Glu Tyr Gly Xaa Ser Gly Tyr Phe Ile Arg Ala Ala Ala Cys Lys  
                     50                      55                      60  
 Thr Glu Cys Gln Gly Ile Asn Pro Ser Cys Leu Asn Glu Gln Thr Leu  
                     65                      70                      75                      80  
 Cys Xaa Val Thr Ile Lys Trp Ser Ser Ser Asp Thr Ser Thr Ser Asp  
                     85                      90                      95  
 Ile Ala Cys Ala Ser Arg Leu Val Asn Met Met Ser Ser Cys Glu Xaa  
                     100                      105                      110  
 Ser Gly Glu Pro Pro Gly Trp Leu Cys Ala Ile Ile Arg Leu Ser Ala  
                     115                      120                      125  
 Tyr Ser Ser Asn Ala Ser Leu Thr Ile Ser Arg Met  
                     130                      135                      140

<210> 409  
 <211> 438  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 409  
 atgccggagg caagcatcgc ctccatcact tcgccgctgc acggggcgca acaggaatgc 60  
 agcaagactt ttttatgtcc gccgggcggg acgagtatgg ggcggtcaat gtcggtaacg 120  
 gtaggtttgt tttgtgtttc cattaactta acgatatctg tcgaatacgg ttgaagcggc 180  
 tattttatca gagccgccgc atgtaaaaca ggggtgtcagg gcatcagccc gagctgcctg 240  
 aacgaacgga cggtttgccg cgttacgata aaatggtcga gcagcgacac atcgaccagc 300  
 gacattgcct gtgccagccg ccttgtgaac atgatgtctt cctgcgaagg ttcgggcgag 360  
 ccgcccggat ggttgtgcgc gataatcagg ctgtcggcat attcgtccaa tgccagtgtg 420  
 acaatttcac ggatgtaa 438

<210> 410  
 <211> 144  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 410  
 Met Pro Glu Ala Ser Ile Ala Ser Ile Thr Ser Pro Leu His Gly Ala  
   1                      5                      10                      15  
 Gln Gln Glu Cys Ser Lys Thr Phe Leu Cys Pro Pro Gly Gly Thr Ser  
                     20                      25                      30  
 Met Gly Arg Ser Met Ser Val Thr Val Gly Leu Phe Cys Val Ser Ile  
                     35                      40                      45  
 Asn Leu Thr Ile Ser Val Glu Tyr Gly Ser Gly Tyr Phe Ile Arg Ala  
                     50                      55                      60

Ala Ala Cys Lys Thr Gly Cys Gln Gly Ile Ser Pro Ser Cys Leu Asn  
65 70 75 80

Glu Arg Thr Val Cys Ala Val Thr Ile Lys Trp Ser Ser Ser Asp Thr  
85 90 95

Ser Thr Ser Asp Ile Ala Cys Ala Ser Arg Leu Val Asn Met Met Ser  
100 105 110

Ser Cys Glu Gly Ser Gly Glu Pro Pro Gly Trp Leu Cys Ala Ile Ile  
115 120 125

Arg Leu Ser Ala Tyr Ser Ser Asn Ala Ser Leu Thr Ile Ser Arg Met  
130 135 140

<210> 411  
<211> 2007  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 411

atgggtcgacg aactcgacct gctgcccgat gccgtcgccg ccaccctgct tgccgacatc 60  
ggacgctacg tccccgattg gaacctattg gtttccgagc gotgcaacag caccgtcgcc 120  
gagctggtca aaggtgtgga cgaagtgcag aaacttacc ctttcgccc ggtggacagc 180  
ctcgccacgc cggaagaacg cgcacagcaa gcggaacca tgcggaaaat gctgctggcg 240  
atggttaccc acatcccgct cgtattaatc aaactggcga tgcgtacgcg caccctgcta 300  
tttttaagca acgccccga cagccctgaa aaacgcgcgc tgcgcaaaga aaccctcgac 360  
atcttcgccc cgctcgccaa ccgcttgggc gtgtggcagc tcaaattggca gctcgaagat 420  
ttgggcttcc gccatcaaga acccgaaaaa tacgcgaaa tgcctctgct tttggacgaa 480  
aaacgcaccg aacgcctcga atacatcgaa aacttcctcg atatcctgcg tacggaactc 540  
aaaaaataca atatccactt tgaagtcgcc ggccgtccga aacacatcta ctccatttac 600  
aaaaaaatgg tgaagaaaaa actcagcttc gacggcctgt tgcacatccg cgccgtgcgg 660  
attctggtcg ataccgtccc cgagtgttac accacgctgg gcatcgtcca cagcctctgg 720  
cagcccatc ccggcgagtt cgacgactac atcgccaaac ccaaaggcaa cggttataaa 780  
agtttgacac ccgtcatcgt cggcccggaa gacaaagggt tggaagtgca aatccgcacc 840  
ttcgatatgc accaattcaa cgaattcggg gtccgcccgc actggcgcta caaagaaggc 900  
ggcaaaaggc attccgccta cgaacaaaaa atcgctgggt tgcgccaact cttggactgg 960  
cgcgaaaata tggcggaag cggcaaggaa gacctcgccg ccgccttcaa aaccgagctt 1020  
ttcaacgaca cgatttatgt tttgaccccg cacggcaaag tcctctctct gccaacgggc 1080  
gcaaccccc aactctcgc ctacgccttg cacagcagca tcggcgaccg ctgccggggc 1140  
gcgaaagtgc aagggcagat tgtgccgttg tccacccgc tcgaaaacgg acagcgcgtc 1200  
gaaatcatta ccgcaaaga agggcatcct tccgtcaact ggctttacga aggtggtg 1260  
aaatccggca aggcacatcg caaaatccgc gcctacatcc gccagcaaaa cgccgacacc 1320  
gtgcgcgaag aagggcgtgt ccaactcgac aagcagcttg ccaaactcac gcccaaacc 1380  
aacctgcaag agcttgccga aaatctcggc taaaaaaagc cagaagacct ctacaccgcc 1440  
gtcggacaag gcgaaatttc caaccgcgcc atccaaaaag cctgcggcac gctgaacgaa 1500  
ccgccccccg tgcccgtcag cgcaaccacc atcgtaaac agtccaaaat caaaaaagg 1560  
ggcaaaaccc gcgtgctcat cgacggcgaa gacggcttga tgaccacgct tgccaaatgc 1620  
tgcaaacccg cgccgcccga cgatattgcc ggcttcgcta ccgcgcagcg cggcatttcc 1680  
gtccaccgca aaacctgccc ctctttccga caccttgccg aacacgcgcc cgaaaaagta 1740  
ctggacgcaa gttgggcggc gttgcaggaa gggcaagtgt tcgcgcgcga tatcgaaatc 1800  
cgcgcccaag accgctccgg gcttttgccg gacgtatccg acgcgctcgc ccgccacaaa 1860

ctcaacgtta ccgcctgtca aaccagtcg cgcgacttgg aagccagcat gaggttcacg 1920  
 ctggaagtca aacaagtcaa cgacctcccg cgcgctctcg ccggcctcgg cgatgtcaaa 1980  
 ggcgtattga gcgttaccg gctttaa 2007

<210> 412  
 <211> 668  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 412  
 Met Val Asp Glu Leu Asp Leu Leu Pro Asp Ala Val Ala Ala Thr Leu  
 1 5 10 15  
 Leu Ala Asp Ile Gly Arg Tyr Val Pro Asp Trp Asn Leu Leu Val Ser  
 20 25 30  
 Glu Arg Cys Asn Ser Thr Val Ala Glu Leu Val Lys Gly Val Asp Glu  
 35 40 45  
 Val Gln Lys Leu Thr His Phe Ala Arg Val Asp Ser Leu Ala Thr Pro  
 50 55 60  
 Glu Glu Arg Ala Gln Gln Ala Glu Thr Met Arg Lys Met Leu Leu Ala  
 65 70 75 80  
 Met Val Thr Asp Ile Arg Val Val Leu Ile Lys Leu Ala Met Arg Thr  
 85 90 95  
 Arg Thr Leu Leu Phe Leu Ser Asn Ala Pro Asp Ser Pro Glu Lys Arg  
 100 105 110  
 Ala Val Ala Lys Glu Thr Leu Asp Ile Phe Ala Pro Leu Ala Asn Arg  
 115 120 125  
 Leu Gly Val Trp Gln Leu Lys Trp Gln Leu Glu Asp Leu Gly Phe Arg  
 130 135 140  
 His Gln Glu Pro Glu Lys Tyr Arg Glu Ile Ala Leu Leu Leu Asp Glu  
 145 150 155 160  
 Lys Arg Thr Glu Arg Leu Glu Tyr Ile Glu Asn Phe Leu Asp Ile Leu  
 165 170 175  
 Arg Thr Glu Leu Lys Lys Tyr Asn Ile His Phe Glu Val Ala Gly Arg  
 180 185 190  
 Pro Lys His Ile Tyr Ser Ile Tyr Lys Lys Met Val Lys Lys Lys Leu  
 195 200 205  
 Ser Phe Asp Gly Leu Phe Asp Ile Arg Ala Val Arg Ile Leu Val Asp  
 210 215 220  
 Thr Val Pro Glu Cys Tyr Thr Thr Leu Gly Ile Val His Ser Leu Trp  
 225 230 235 240  
 Gln Pro Ile Pro Gly Glu Phe Asp Asp Tyr Ile Ala Asn Pro Lys Gly

245	250	255
Asn Gly Tyr Lys Ser Leu His Thr Val Ile Val Gly Pro Glu Asp Lys		
260	265	270
Gly Val Glu Val Gln Ile Arg Thr Phe Asp Met His Gln Phe Asn Glu		
275	280	285
Phe Gly Val Ala Ala His Trp Arg Tyr Lys Glu Gly Gly Lys Gly Asp		
290	295	300
Ser Ala Tyr Glu Gln Lys Ile Ala Trp Leu Arg Gln Leu Leu Asp Trp		
305	310	315
Arg Glu Asn Met Ala Glu Ser Gly Lys Glu Asp Leu Ala Ala Ala Phe		
325	330	335
Lys Thr Glu Leu Phe Asn Asp Thr Ile Tyr Val Leu Thr Pro His Gly		
340	345	350
Lys Val Leu Ser Leu Pro Thr Gly Ala Thr Pro Ile Asp Phe Ala Tyr		
355	360	365
Ala Leu His Ser Ser Ile Gly Asp Arg Cys Arg Gly Ala Lys Val Glu		
370	375	380
Gly Gln Ile Val Pro Leu Ser Thr Pro Leu Glu Asn Gly Gln Arg Val		
385	390	395
Glu Ile Ile Thr Ala Lys Glu Gly His Pro Ser Val Asn Trp Leu Tyr		
405	410	415
Glu Gly Trp Val Lys Ser Gly Lys Ala Ile Gly Lys Ile Arg Ala Tyr		
420	425	430
Ile Arg Gln Gln Asn Ala Asp Thr Val Arg Glu Glu Gly Arg Val Gln		
435	440	445
Leu Asp Lys Gln Leu Ala Lys Leu Thr Pro Lys Pro Asn Leu Gln Glu		
450	455	460
Leu Ala Glu Asn Leu Gly Tyr Lys Lys Pro Glu Asp Leu Tyr Thr Ala		
465	470	475
Val Gly Gln Gly Glu Ile Ser Asn Arg Ala Ile Gln Lys Ala Cys Gly		
485	490	495
Thr Leu Asn Glu Pro Pro Pro Val Pro Val Ser Ala Thr Thr Ile Val		
500	505	510
Lys Gln Ser Lys Ile Lys Lys Gly Gly Lys Thr Gly Val Leu Ile Asp		
515	520	525
Gly Glu Asp Gly Leu Met Thr Thr Leu Ala Lys Cys Cys Lys Pro Ala		
530	535	540
Pro Pro Asp Asp Ile Ala Gly Phe Val Thr Arg Glu Arg Gly Ile Ser		

545		550		555		560
Val His Arg Lys Thr Cys Pro Ser Phe Arg His Leu Ala Glu His Ala						
	565			570		575
Pro Glu Lys Val Leu Asp Ala Ser Trp Ala Ala Leu Gln Glu Gly Gln						
	580		585		590	
Val Phe Ala Val Asp Ile Glu Ile Arg Ala Gln Asp Arg Ser Gly Leu						
	595	600		605		
Leu Arg Asp Val Ser Asp Ala Leu Ala Arg His Lys Leu Asn Val Thr						
	610	615		620		
Ala Val Gln Thr Gln Ser Arg Asp Leu Glu Ala Ser Met Arg Phe Thr						
	625	630		635		640
Leu Glu Val Lys Gln Val Asn Asp Leu Pro Arg Val Leu Ala Gly Leu						
	645		650		655	
Gly Asp Val Lys Gly Val Leu Ser Val Thr Arg Leu						
	660	665				

<210> 413  
 <211> 1476  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 413  
 gtgaaactca agaaatacaa tgtccatttc gaagtcgcgc gccgcccga acacatctac 60  
 tccattttaca aaaaaatggt gaagaaaaaa ctacgcttcg acggcctctt tgacatccgc 120  
 gccgtgcgaa ttctggttga taccgtcccc gagtggtaca ccacgctggg tatcgccac 180  
 agcctctggc agcccattcc cggcgagttc gacgactaca tcgccaatcc caaaggcaac 240  
 ggctataaaa gtttgacac cgtcatcgtc ggcccggaag acaaaggcgt ggaagtacaa 300  
 atccgcacct tcgatatgca ccaattcaac gaattcggtg tcgccgcca ctggcggtac 360  
 aaagagggcg gcaagggcga ttccgcctac gaacagaaaa tcgcctggtt gcgccaaactc 420  
 ttggactggc gcgaaaacat ggcggaagc ggcaaggaag acctcgccgc cgccttcaaa 480  
 accgagcttt tcaacgacac gatttatggt ttgaccccg caggcaaagt cctctccctg 540  
 cccacgggcg cgacccccat cgacttcgcc tacgccctgc acagcagcat cggcgaccgt 600  
 tgccgcggtg cgaaagtcca agggcagatt gtgccgctgt ccaccccgct cgaaaacgga 660  
 cagcgctcg aatcattac cgccaaagaa gggcatcctt ccgtcaactg gctttacgaa 720  
 ggctgggtca aatccaacaa ggcaatcggc aaaatccgcg cctacatccg ccagcaaaac 780  
 gccgacaccg tgcgcgaaga aggcgcgctc caactcgaca aacagcttgc caaactcacg 840  
 cccaaaccca acctgcaaga gcttgccgaa aatctcggtt acaaaaagcc agaagacctc 900  
 tacaccgccg tcggacaagg cgaaatttcc aaccgcgcca tccaaaaagc ctgcggcacg 960  
 ctgaacgaac cgccgcccgt acccgctcagc gaaaccacca tcgtcaaaca gtccaaaatc 1020  
 aaaaaaggcg gcaaaaacgg cgtgctcatc gacggcgaag acgggtctgat gaccacgctt 1080  
 gccaaatgct gcaaacccgc gccgcccgc gatattatcg gcttcgttac ccgcgagcgc 1140  
 ggcatttcag tgcaccgcaa awyytkcyg tctttccaac acctcgccga acacgcgccc 1200  
 gawaaagtgc tggacgcaag ctggcgcgca ttgcaggaag gacaagtatt cgccgtcgat 1260  
 atcgaaatcc gcgcccgaaga ccgctccggg cttttgcgcg acgtatccga cgcgctcgcc 1320  
 cgccacaac tcaacgttac cgccgtgcaa acccagtcgc gcgacttga agccagcatg 1380  
 aggttcacgc tgaagtcaa acaagtcaac gacctccgc gcgtcctcgc cagcctcggc 1440  
 gacgtcaaag gcgtattgag cgttaccgg ctttaa 1476

<213> *Neisseria meningitidis*

Val Lys Leu Lys Lys Tyr Asn Val His Phe Glu Val Ala Gly Arg Pro  
1 5 10 15

Lys His Ile Tyr Ser Ile Tyr Lys Lys Met Val Lys Lys Lys Leu Ser  
20 25 30

Phe Asp Gly Leu Phe Asp Ile Arg Ala Val Arg Ile Leu Val Asp Thr  
35 40 45

Val Pro Glu Cys Tyr Thr Thr Leu Gly Ile Val His Ser Leu Trp Gln  
50 55 60

Pro Ile Pro Gly Glu Phe Asp Asp Tyr Ile Ala Asn Pro Lys Gly Asn  
65 70 75 80

Gly Tyr Lys Ser Leu His Thr Val Ile Val Gly Pro Glu Asp Lys Gly  
85 90 95

Val Glu Val Gln Ile Arg Thr Phe Asp Met His Gln Phe Asn Glu Phe  
100 105 110

Gly Val Ala Ala His Trp Arg Tyr Lys Glu Gly Gly Lys Gly Asp Ser  
 . 115 120 125

Ala Tyr Glu Gln Lys Ile Ala Trp Leu Arg Gln Leu Leu Asp Trp Arg  
130 135 140

Glu Asn Met Ala Glu Ser Gly Lys Glu Asp Leu Ala Ala Ala Phe Lys  
145 150 155 160

Thr Glu Leu Phe Asn Asp Thr Ile Tyr Val Leu Thr Pro His Gly Lys  
165 170 175

Val Leu Ser Leu Pro Thr Gly Ala Thr Pro Ile Asp Phe Ala Tyr Ala  
180 185 190

Leu His Ser Ser Ile Gly Asp Arg Cys Arg Gly Ala Lys Val Glu Gly  
195 200 205

Gln Ile Val Pro Leu Ser Thr Pro Leu Glu Asn Gly Gln Arg Val Glu  
210 215 220

Ile Ile Thr Ala Lys Glu Gly His Pro Ser Val Asn Trp Leu Tyr Glu  
225 230 235 240

Gly Trp Val Lys Ser Asn Lys Ala Ile Gly Lys Ile Arg Ala Tyr Ile  
245 250 255

Arg Gln Gln Asn Ala Asp Thr Val Arg Glu Glu Gly Arg Val Gln Leu  
260 265 270



Asp Lys Gln Leu Ala Lys Leu Thr Pro Lys Pro Asn Leu Gln Glu Leu  
275 280 285

Ala Glu Asn Leu Gly Tyr Lys Lys Pro Glu Asp Leu Tyr Thr Ala Val  
290 295 300

Gly Gln Gly Glu Ile Ser Asn Arg Ala Ile Gln Lys Ala Cys Gly Thr  
305 310 315 320

Leu Asn Glu Pro Pro Pro Val Pro Val Ser Glu Thr Thr Ile Val Lys  
325 330 335

Gln Ser Lys Ile Lys Lys Gly Gly Lys Asn Gly Val Leu Ile Asp Gly  
340 345 350

Glu Asp Gly Leu Met Thr Thr Leu Ala Lys Cys Cys Lys Pro Ala Pro  
355 360 365

Pro Asp Asp Ile Ile Gly Phe Val Thr Arg Glu Arg Gly Ile Ser Val  
370 375 380

His Arg Lys Xaa Xaa Xaa Ser Phe Gln His Leu Ala Glu His Ala Pro  
385 390 395 400

Xaa Lys Val Leu Asp Ala Ser Trp Ala Ala Leu Gln Glu Gly Gln Val  
405 410 415

Phe Ala Val Asp Ile Glu Ile Arg Ala Gln Asp Arg Ser Gly Leu Leu  
420 425 430

Arg Asp Val Ser Asp Ala Leu Ala Arg His Lys Leu Asn Val Thr Ala  
435 440 445

Val Gln Thr Gln Ser Arg Asp Leu Glu Ala Ser Met Arg Phe Thr Leu  
450 455 460

Glu Val Lys Gln Val Asn Asp Leu Pro Arg Val Leu Ala Ser Leu Gly  
465 470 475 480

Asp Val Lys Gly Val Leu Ser Val Thr Arg Leu  
485 490

<210> 415

<211> 2007

<212> DNA

<213> Neisseria meningitidis

<400> 415

atggttcacg aactcgacct gctccccgat gccgtcgccg ccaccctgct tgccgacatc 60  
ggacgctacg tccccgactg gaacctattg gtttccgaac gctgcaacag taccgtcgcc 120  
gagctggtca aaggtgtgga cgaagtgcag aaactcacc acttcgccc ggtggacagc 180  
ctcgccacgc cggaagaacg cgcccagcag gcagaaacta tgcggaaaat gctgctggcg 240  
atggttaccg acatccgcgt cgtgttaatc aaactggcga tgcgtacgcg caccctgcaa 300  
tttttaagca acgccccga cagccccgaa aaacgcgccg tcgccaaaga aaccctcgac 360  
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<210> 416

<211> 668

<212> PRT

<213> Neisseria meningitidis

<400> 416

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Glu Arg Cys Asn Ser Thr Val Ala Glu Leu Val Lys Gly Val Asp Glu
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Met Val Thr Asp Ile Arg Val Val Leu Ile Lys Leu Ala Met Arg Thr
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Ala Val Ala Lys Glu Thr Leu Asp Ile Phe Ala Pro Leu Ala Asn Arg

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Pro	Glu	Lys	Val	Leu	Asp	Ala	Ser	Trp	Ala	Ala	Leu	Gln	Glu	Gly	Gln
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Val	Phe	Ala	Val	Asp	Ile	Glu	Ile	Arg	Ala	Gln	Asp	Arg	Ser	Gly	Leu
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 <211> 2214  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 417  
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 tggtcgctgg cgcaggaaca ttatcctgcc gatgccgccga cgccgtatgg cgagccgctg 180

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<210> 418

<211> 737

<212> PRT

<213> Neisseria gonorrhoeae

<400> 418

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Asp Lys Asn Leu Ile Gly Thr Ala Trp Ser Leu Ala Gln Glu His Tyr  
35 40 45

Pro Ala Asp Ala Ala Thr Pro Tyr Gly Glu Pro Leu Pro Asp His Phe  
50 55 60

Leu Gly Ala Ala Gln Met Val Asp Glu Leu Asp Leu Leu Pro Asp Ala  
65 70 75 80

Val Ala Ala Thr Leu Leu Ala Asp Ile Gly Arg Tyr Val Pro Asp Trp  
85 90 95

Asn Leu Leu Val Ser Glu Arg Cys Asn Ser Thr Val Ala Glu Leu Val  
100 105 110

Lys Gly Val Asp Glu Val Gln Lys Leu Thr His Phe Ala Arg Val Asp  
115 120 125

Ser Leu Ala Thr Pro Glu Glu Arg Ala Gln Gln Ala Glu Thr Met Arg  
130 135 140

Lys Met Leu Leu Ala Met Val Thr Asp Ile Arg Val Val Leu Ile Lys  
145 150 155 160

Leu Ala Met Arg Thr Arg Thr Leu Gln Phe Leu Ser Asn Ala Pro Asp  
165 170 175

Ser Pro Glu Lys Arg Ala Val Ala Lys Glu Thr Leu Asp Ile Phe Ala  
180 185 190

Pro Leu Ala Asn Arg Leu Gly Val Trp Gln Leu Lys Trp Gln Leu Glu  
195 200 205

Asp Leu Gly Phe Arg His Gln Glu Pro Glu Lys Tyr Arg Glu Ile Ala  
210 215 220

Leu Leu Leu Asp Glu Lys Arg Thr Glu Arg Leu Glu Tyr Ile Glu Asn  
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Phe Leu Asp Ile Leu Arg Thr Glu Leu Lys Lys Tyr Asn Ile His Phe  
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Glu Val Ala Gly Arg Pro Lys His Ile Tyr Ser Ile Tyr Lys Lys Met  
260 265 270

Val Lys Lys Lys Leu Ser Phe Asp Gly Leu Phe Asp Ile Arg Ala Val  
275 280 285

Arg Ile Leu Val Asp Thr Val Pro Glu Cys Tyr Thr Thr Leu Gly Ile  
290 295 300

Val His Ser Leu Trp Gln Pro Ile Pro Gly Glu Phe Asp Asp Tyr Ile  
305 310 315 320

Ala Asn Pro Lys Gly Asn Gly Tyr Lys Ser Leu His Thr Val Ile Val  
325 330 335

Gly Pro Glu Glu Lys Gly Val Glu Val Gln Ile Arg Thr Phe Asp Met  
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His Gln Phe Asn Glu Phe Gly Val Ala Ala His Trp Arg Tyr Lys Glu  
355 360 365

Gly Gly Lys Gly Asp Ser Ala Tyr Glu Gln Lys Ile Ala Trp Leu Arg  
370 375 380

Gln Leu Leu Asp Trp Arg Glu Asn Met Ala Glu Ser Gly Lys Glu Asp  
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 Leu Ala Ala Ala Phe Lys Thr Glu Leu Phe Asn Asp Thr Ile Tyr Val  
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 Gly Ala Lys Val Glu Gly Gln Ile Val Pro Leu Ser Thr Pro Leu Glu  
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 Asn Gly Gln Arg Val Glu Ile Ile Thr Ala Lys Glu Gly His Pro Ser  
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 Val Asn Trp Leu Tyr Glu Gly Trp Val Lys Ser Gly Lys Ala Ile Gly  
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 Glu Gly Arg Val Gln Leu Asp Lys Gln Leu Ala Lys Leu Thr Pro Lys  
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 Pro Asn Leu Gln Glu Leu Ala Glu Asn Leu Gly Tyr Lys Lys Pro Glu  
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 Asp Leu Tyr Thr Ala Val Gly Gln Gly Glu Ile Ser Asn Arg Ala Ile  
 545 550 555 560  
 Gln Lys Ala Cys Gly Thr Leu Asn Glu Pro Pro Pro Val Pro Val Ser  
 565 570 575  
 Ala Thr Thr Ile Val Lys Gln Ser Lys Ile Lys Lys Gly Gly Lys Thr  
 580 585 590  
 Gly Val Leu Ile Asp Gly Glu Asp Gly Leu Met Thr Thr Leu Ala Lys  
 595 600 605  
 Cys Cys Lys Pro Ala Pro Pro Asp Asp Ile Ala Gly Phe Val Thr Arg  
 610 615 620  
 Glu Arg Gly Ile Ser Val His Arg Lys Thr Cys Pro Ser Phe Arg His  
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 Leu Ala Glu His Ala Pro Glu Lys Val Leu Asp Ala Ser Trp Ala Ala  
 645 650 655  
 Leu Gln Glu Gly Gln Val Phe Ala Val Asp Ile Glu Ile Arg Ala Gln  
 660 665 670  
 Asp Arg Ser Gly Leu Leu Arg Asp Val Ser Asp Ala Leu Ala Arg His

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Ser Met Arg Phe Thr Leu Glu Val Lys Gln Val Asn Asp Leu Pro Arg				
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Leu

<210> 419  
 <211> 2214  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 419

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2214

<210> 420

<211> 737

<212> PRT

<213> *Neisseria meningitidis*

<400> 420

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Asp Lys Asn Leu Ile Gly Thr Ala Trp Leu Leu Ala Gln Glu His Tyr  
35 40 45

Pro Ala Asp Ala Ala Thr Pro Tyr Gly Glu Pro Leu Pro Asp His Phe  
50 55 60

Leu Gly Ala Ala Gln Met Val His Glu Leu Asp Leu Leu Pro Asp Ala  
65 70 75 80

Val Ala Ala Thr Leu Leu Ala Asp Ile Gly Arg Tyr Val Pro Asp Trp  
85 90 95

Asn Leu Leu Val Ser Glu Arg Cys Asn Ser Thr Val Ala Glu Leu Val  
100 105 110

Lys Gly Val Asp Glu Val Gln Lys Leu Thr His Phe Ala Arg Val Asp  
115 120 125

Ser Leu Ala Thr Pro Glu Glu Arg Ala Gln Gln Ala Glu Thr Met Arg  
130 135 140

Lys Met Leu Leu Ala Met Val Thr Asp Ile Arg Val Val Leu Ile Lys  
145 150 155 160

Leu Ala Met Arg Thr Arg Thr Leu Gln Phe Leu Ser Asn Ala Pro Asp  
165 170 175

Ser Pro Glu Lys Arg Ala Val Ala Lys Glu Thr Leu Asp Ile Phe Ala  
180 185 190

Pro Leu Ala Asn Arg Leu Gly Val Trp Gln Leu Lys Trp Gln Leu Glu  
195 200 205

Asp Leu Gly Phe Arg His Gln Lys Pro Glu Lys Tyr Arg Glu Ile Ala  
210 215 220

Leu Leu Leu Asp Glu Lys Arg Thr Glu Arg Leu Glu Tyr Ile Glu Asn  
225 230 235 240

Phe Leu Asn Ile Leu Arg Gly Glu Leu Lys Lys Tyr Asn Val His Phe  
245 250 255

Glu Val Ala Gly Arg Pro Lys His Ile Tyr Ser Ile Tyr Lys Lys Met  
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 Val Lys Lys Lys Leu Ser Phe Asp Gly Leu Phe Asp Ile Arg Ala Val  
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 Arg Ile Leu Val Asp Thr Val Pro Glu Cys Tyr Thr Thr Leu Gly Ile  
 290 295 300  
 Val His Ser Leu Trp Gln Pro Ile Pro Gly Glu Phe Asp Asp Tyr Ile  
 305 310 315 320  
 Ala Asn Pro Lys Gly Asn Gly Tyr Lys Ser Leu His Thr Val Ile Val  
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 Gly Pro Glu Asp Lys Gly Val Glu Val Gln Ile Arg Thr Phe Asp Met  
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 355 360 365  
 Gly Gly Lys Gly Asp Ser Ala Tyr Glu Gln Lys Ile Ala Trp Leu Arg  
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 385 390 395 400  
 Leu Ala Ala Ala Phe Lys Thr Glu Leu Phe Asn Asp Thr Ile Tyr Val  
 405 410 415  
 Leu Thr Pro His Gly Lys Val Leu Ser Leu Pro Thr Gly Ala Thr Pro  
 420 425 430  
 Ile Asp Phe Ala Tyr Ala Leu His Ser Ser Ile Gly Asp Arg Cys Arg  
 435 440 445  
 Gly Ala Lys Val Glu Gly Gln Ile Val Pro Leu Ser Thr Pro Leu Glu  
 450 455 460  
 Asn Gly Gln Arg Val Glu Ile Ile Thr Ala Lys Glu Gly His Pro Ser  
 465 470 475 480  
 Val Asn Trp Leu Tyr Glu Gly Trp Val Lys Ser Asn Lys Ala Ile Gly  
 485 490 495  
 Lys Ile Arg Ala Tyr Ile Arg Gln Gln Asn Ala Asp Thr Val Arg Glu  
 500 505 510  
 Glu Gly Arg Val Gln Leu Asp Lys Gln Leu Ala Lys Leu Thr Pro Lys  
 515 520 525  
 Pro Asn Leu Gln Glu Leu Ala Glu Asn Leu Gly Tyr Lys Lys Pro Glu  
 530 535 540  
 Asp Leu Tyr Thr Ala Val Gly Gln Gly Glu Ile Ser Asn Arg Ala Ile  
 545 550 555 560

Gln Lys Ala Cys Gly Thr Leu Asn Glu Pro Pro Pro Val Pro Val Ser  
 565 570 575  
 Glu Thr Thr Ile Val Lys Gln Ser Lys Ile Lys Lys Gly Gly Lys Asn  
 580 585 590  
 Gly Val Leu Ile Asp Gly Glu Asp Gly Leu Met Thr Thr Leu Ala Lys  
 595 600 605  
 Cys Cys Lys Pro Ala Pro Pro Asp Asp Ile Ile Gly Phe Val Thr Arg  
 610 615 620  
 Glu Arg Gly Ile Ser Val His Arg Lys Thr Cys Pro Ser Phe Gln His  
 625 630 635 640  
 Leu Ala Glu His Ala Pro Glu Lys Val Leu Asp Ala Ser Trp Ala Ala  
 645 650 655  
 Leu Gln Glu Gly Gln Val Phe Ala Val Asp Ile Glu Ile Arg Ala Gln  
 660 665 670  
 Asp Arg Ser Gly Leu Leu Arg Asp Val Ser Asp Ala Leu Ala Arg His  
 675 680 685  
 Lys Leu Asn Val Thr Ala Val Gln Thr Gln Ser Arg Asp Leu Glu Ala  
 690 695 700  
 Ser Met Arg Phe Thr Leu Glu Val Lys Gln Val Asn Asp Leu Pro Arg  
 705 710 715 720  
 Val Leu Ala Ser Leu Gly Asp Val Lys Gly Val Leu Ser Val Thr Arg  
 725 730 735

Leu

<210> 421  
 <211> 2214  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 421  
 atgaccgcca tcagcccgat tcaagacacg caaagcgcgga ctctgcaaga attgcgcgaa 60  
 tggttcgaca gctactgcac cgcgctgccg aacaacgata aaaaacttgt ctagccgcc 120  
 cgttcgctgg cggaagcaca ttaccccgcc gatgccgcca cgccgtatgg cgaaccgctg 180  
 cccgaccact tcctcggcgc ggcgcaaattg gttcatgaac tcgacctgct ccccgatgcc 240  
 gtcgcccga cctgcttgc cgacatcgga cgctacgtcc ccgactggaa cctattggtt 300  
 tccgaacgct gcaacagtac cgtcgccgag ctggtcaaag gtgtggacga agtgcagaaa 360  
 ctcaccact tcgcccgggt ggacagcctc gccacgccgg aagaacgcgc ccagcaggca 420  
 gaaactatgc ggaaaatgct gctggcgatg gttaccgaca tccgcgtcgt gttaatcaaa 480  
 ctggcgatgc gtacgcgcac cctgcaattt ttaagcaacg ccccgacag ccccgaaaaa 540  
 cgcgccgtcg ccaaagaaac cctcgacatc ttgcgccgc tcgccaaccg tttgggcgtg 600  
 tggcagctca aatggcagct cgaagatttg ggcttcgcc atcaagaacc cgaaaaatac 660  
 cgcgaaatcg cctgctttt ggacgaaaaa cgcaccgaac gcctcgaata catcgaaaac 720  
 ttccttaata tcctgcgtac ggaactcaaa aaatacaata tccactttga agtcgccggc 780  
 cgtccgaaac acatctactc catttacaaa aaaaatggtga agaaaaaact cagcttcgac 840

```

gggttggttcg acatccgcgc cgtgcgggatt ctggttgata ccgtccccga gtgttacacc 900
acactgggca ttgtccacag cctctggcag cccattcccg gcgagttcga cgactacatc 960
gccaaccgca aaggcaacgg ctataaaagt ttgcacaccg tcatcgtcgg ccggaagac 1020
aaaggcggtg aagtgc aaat cgcaccttc gatatgcacc aattcaacga attcgggtgtc 1080
gccgcgcact ggcgttacaa agagggcggc aaaggcgatt ccgcctacga acaaaaaatc 1140
gcctggttac gccaaactttt ggactggcgc gaaaacatgg cggaaagcgg caaggaagac 1200
ctcgccgccc ccttcaaaac cgagcttttc aacgacacga tttatgtttt gaccccgcac 1260
ggcaaagtcc tctccctgcc cacaggcgcg acccccatcg acttcgccta cgccctgcac 1320
agcagcatcg gcgaccgttg ccgcgggtgcg aaagtgcgaag ggcagattgt gccgctgtcc 1380
accccgctcg aaaacggaca gcggtgctgaa atcattaccg ccaaagaagg gcatccttcc 1440
gtcaactggc tttacgaagg ctgggtcaaa tccaacaagg caatcggcaa aatccgcgcc 1500
tacatccgcc agcaaaacgc cgacaccgtg cggaagaag gccgcgtcca actcgacaaa 1560
cagcttgcca aactcacgcc caaacccaac ctgcaagagc ttgccgaaaa tctcggctac 1620
aaaaagccag aagacctcta caccgccgtc ggacaaggcg aaatttccaa ccgcgccatc 1680
caaaaagcct gcggcacgct gaacgaaccg ccgcccgtac ccgtcagcga aaccaccatc 1740
gtcaaacagt ccaaaatcaa aaaaggcggc aaaaacggcg tgctcatcga cggcgaagac 1800
ggtctgatga ccacgcttgc caaatgctgc aaaccgcgcg cgcccgcga cattgtcggc 1860
ttcgttacc gcgacgcggg catttcggta caccgcaaaa cctgcccctc tttccgacac 1920
ctcgccgaac acgcgccga aaaagtactg gacgcaagtt gggcggcggt gcaggaagga 1980
caagtgttcg ccgtcgatat cgaaatccgc gcccaagacc gctccgggct tttgcgcgac 2040
gtatccgacg cgctcgcccc ccacaaactc aacgttaccg ccgtgcaaac ccagtcgccg 2100
gacttggaag ccagcatgag gttcacgctc gaagtcaaac aagttaccga cctccacgc 2160
gtcctcgcca gcctcgcgca cgtcaaaggc gtattgagcg ttaccggct ttaa 2214

```

<210> 422

<211> 737

<212> PRT

<213> Neisseria meningitidis

<400> 422

```

Met Thr Ala Ile Ser Pro Ile Gln Asp Thr Gln Ser Ala Thr Leu Gln
  1                      5                      10                      15

```

```

Glu Leu Arg Glu Trp Phe Asp Ser Tyr Cys Thr Ala Leu Pro Asn Asn
      20                      25                      30

```

```

Asp Lys Lys Leu Val Leu Ala Ala Arg Ser Leu Ala Glu Ala His Tyr
      35                      40                      45

```

```

Pro Ala Asp Ala Ala Thr Pro Tyr Gly Glu Pro Leu Pro Asp His Phe
      50                      55                      60

```

```

Leu Gly Ala Ala Gln Met Val His Glu Leu Asp Leu Leu Pro Asp Ala
      65                      70                      75                      80

```

```

Val Ala Ala Thr Leu Leu Ala Asp Ile Gly Arg Tyr Val Pro Asp Trp
      85                      90                      95

```

```

Asn Leu Leu Val Ser Glu Arg Cys Asn Ser Thr Val Ala Glu Leu Val
      100                      105                      110

```

```

Lys Gly Val Asp Glu Val Gln Lys Leu Thr His Phe Ala Arg Val Asp
      115                      120                      125

```

```

Ser Leu Ala Thr Pro Glu Glu Arg Ala Gln Gln Ala Glu Thr Met Arg
      130                      135                      140

```

Lys Met Leu Leu Ala Met Val Thr Asp Ile Arg Val Val Leu Ile Lys  
 145 150 155 160  
 Leu Ala Met Arg Thr Arg Thr Leu Gln Phe Leu Ser Asn Ala Pro Asp  
 165 170 175  
 Ser Pro Glu Lys Arg Ala Val Ala Lys Glu Thr Leu Asp Ile Phe Ala  
 180 185 190  
 Pro Leu Ala Asn Arg Leu Gly Val Trp Gln Leu Lys Trp Gln Leu Glu  
 195 200 205  
 Asp Leu Gly Phe Arg His Gln Glu Pro Glu Lys Tyr Arg Glu Ile Ala  
 210 215 220  
 Leu Leu Leu Asp Glu Lys Arg Thr Glu Arg Leu Glu Tyr Ile Glu Asn  
 225 230 235 240  
 Phe Leu Asn Ile Leu Arg Thr Glu Leu Lys Lys Tyr Asn Ile His Phe  
 245 250 255  
 Glu Val Ala Gly Arg Pro Lys His Ile Tyr Ser Ile Tyr Lys Lys Met  
 260 265 270  
 Val Lys Lys Lys Leu Ser Phe Asp Gly Leu Phe Asp Ile Arg Ala Val  
 275 280 285  
 Arg Ile Leu Val Asp Thr Val Pro Glu Cys Tyr Thr Thr Leu Gly Ile  
 290 295 300  
 Val His Ser Leu Trp Gln Pro Ile Pro Gly Glu Phe Asp Asp Tyr Ile  
 305 310 315 320  
 Ala Asn Pro Lys Gly Asn Gly Tyr Lys Ser Leu His Thr Val Ile Val  
 325 330 335  
 Gly Pro Glu Asp Lys Gly Val Glu Val Gln Ile Arg Thr Phe Asp Met  
 340 345 350  
 His Gln Phe Asn Glu Phe Gly Val Ala Ala His Trp Arg Tyr Lys Glu  
 355 360 365  
 Gly Gly Lys Gly Asp Ser Ala Tyr Glu Gln Lys Ile Ala Trp Leu Arg  
 370 375 380  
 Gln Leu Leu Asp Trp Arg Glu Asn Met Ala Glu Ser Gly Lys Glu Asp  
 385 390 395 400  
 Leu Ala Ala Ala Phe Lys Thr Glu Leu Phe Asn Asp Thr Ile Tyr Val  
 405 410 415  
 Leu Thr Pro His Gly Lys Val Leu Ser Leu Pro Thr Gly Ala Thr Pro  
 420 425 430  
 Ile Asp Phe Ala Tyr Ala Leu His Ser Ser Ile Gly Asp Arg Cys Arg  
 435 440 445

Gly Ala Lys Val Glu Gly Gln Ile Val Pro Leu Ser Thr Pro Leu Glu  
 450 455 460  
 Asn Gly Gln Arg Val Glu Ile Ile Thr Ala Lys Glu Gly His Pro Ser  
 465 470 475 480  
 Val Asn Trp Leu Tyr Glu Gly Trp Val Lys Ser Asn Lys Ala Ile Gly  
 485 490 495  
 Lys Ile Arg Ala Tyr Ile Arg Gln Gln Asn Ala Asp Thr Val Arg Glu  
 500 505 510  
 Glu Gly Arg Val Gln Leu Asp Lys Gln Leu Ala Lys Leu Thr Pro Lys  
 515 520 525  
 Pro Asn Leu Gln Glu Leu Ala Glu Asn Leu Gly Tyr Lys Lys Pro Glu  
 530 535 540  
 Asp Leu Tyr Thr Ala Val Gly Gln Gly Glu Ile Ser Asn Arg Ala Ile  
 545 550 555 560  
 Gln Lys Ala Cys Gly Thr Leu Asn Glu Pro Pro Pro Val Pro Val Ser  
 565 570 575  
 Glu Thr Thr Ile Val Lys Gln Ser Lys Ile Lys Lys Gly Gly Lys Asn  
 580 585 590  
 Gly Val Leu Ile Asp Gly Glu Asp Gly Leu Met Thr Thr Leu Ala Lys  
 595 600 605  
 Cys Cys Lys Pro Ala Pro Pro Asp Asp Ile Val Gly Phe Val Thr Arg  
 610 615 620  
 Asp Arg Gly Ile Ser Val His Arg Lys Thr Cys Pro Ser Phe Arg His  
 625 630 635 640  
 Leu Ala Glu His Ala Pro Glu Lys Val Leu Asp Ala Ser Trp Ala Ala  
 645 650 655  
 Leu Gln Glu Gly Gln Val Phe Ala Val Asp Ile Glu Ile Arg Ala Gln  
 660 665 670  
 Asp Arg Ser Gly Leu Leu Arg Asp Val Ser Asp Ala Leu Ala Arg His  
 675 680 685  
 Lys Leu Asn Val Thr Ala Val Gln Thr Gln Ser Arg Asp Leu Glu Ala  
 690 695 700  
 Ser Met Arg Phe Thr Leu Glu Val Lys Gln Val Thr Asp Leu Pro Arg  
 705 710 715 720  
 Val Leu Ala Ser Leu Gly Asp Val Lys Gly Val Leu Ser Val Thr Arg  
 725 730 735  
 Leu

<210> 423  
 <211> 378  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 423  
 atgtgctgagt tcaaggattt tagaagaaac atcccttggt ttgaagagta tgacgaaaat 60  
 tcattttattg gcaaattggt tgaatgacggg gtgtgggatg atgaagaata ttggaagctg 120  
 gagaatgatt taatcgagggt taggagaaaa tacccttatt cgatggatat accaagggtat 180  
 attgtgattg gaatcggtac cattattgat tttttaatgg ttccaaattg ggagcttttt 240  
 gaaattaaag cttccccttg gttgcctgat agcgtgggaa ttcataaacg ttatgaaaga 300  
 ttcacaacga tgctccgtta tttttttacc gagaaagaca tagtcaacgt gcgatttgat 360  
 tattacaaca aaaaatag 378

<210> 424  
 <211> 125  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 424  
 Met Cys Glu Phe Lys Asp Phe Arg Arg Asn Ile Pro Cys Phe Glu Glu  
 1 5 10 15  
 Tyr Asp Glu Asn Ser Phe Ile Gly Lys Trp Tyr Asp Asp Gly Val Trp  
 20 25 30  
 Asp Asp Glu Glu Tyr Trp Lys Leu Glu Asn Asp Leu Ile Glu Val Arg  
 35 40 45  
 Arg Lys Tyr Pro Tyr Pro Met Asp Ile Pro Arg Asp Ile Val Ile Gly  
 50 55 60  
 Ile Gly Thr Ile Ile Asp Phe Leu Met Val Pro Asn Trp Glu Leu Phe  
 65 70 75 80  
 Glu Ile Lys Ala Ser Pro Trp Leu Pro Asp Ser Val Gly Ile His Glu  
 85 90 95  
 Arg Tyr Glu Arg Phe Thr Thr Met Leu Arg Tyr Ile Phe Thr Glu Lys  
 100 105 110  
 Asp Ile Val Asn Val Arg Phe Asp Tyr Tyr Asn Lys Lys  
 115 120 125

<210> 425  
 <211> 378  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 425  
 atgtgtgagt tcaaggatat tataagaaac gttccttatt ttgaggggta tgacgaaaat 60  
 tcattttattg gcaaattggt tgaatgacggg gtgtgggatg atgaagaata ttggaagtgt 120  
 gagaatgatt taatcgagggt tagaaaaaaa tacccttatt cgatggacat accaagatat 180

gttgtcattg gaatcgggtac cattattgat ttcttaatgg ttccaaattg gaaacttttt 240  
gaaattaaag cttccccttg gttgcctgat agtgtgggaa ttcataaacg ttatgaaaga 300  
ttcacaacga tgctccgtta tatttttacc gagaaagaca tagtcaacgt gcgatttgat 360  
tattacaaca aaaaatag 378

<210> 426  
<211> 125  
<212> PRT  
<213> Neisseria meningitidis

<400> 426  
Met Cys Glu Phe Lys Asp Ile Ile Arg Asn Val Pro Tyr Phe Glu Gly  
1 5 10 15  
Tyr Asp Glu Asn Ser Phe Ile Gly Lys Trp Tyr Asp Asp Gly Val Trp  
20 25 30  
Asp Asp Glu Glu Tyr Trp Lys Leu Glu Asn Asp Leu Ile Glu Val Arg  
35 40 45  
Lys Lys Tyr Pro Tyr Pro Met Asp Ile Pro Arg Tyr Val Val Ile Gly  
50 55 60  
Ile Gly Thr Ile Ile Asp Phe Leu Met Val Pro Asn Trp Lys Leu Phe  
65 70 75 80  
Glu Ile Lys Ala Ser Pro Trp Leu Pro Asp Ser Val Gly Ile His Glu  
85 90 95  
Arg Tyr Glu Arg Phe Thr Thr Met Leu Arg Tyr Ile Phe Thr Glu Lys  
100 105 110  
Asp Ile Val Asn Val Arg Phe Asp Tyr Tyr Asn Lys Lys  
115 120 125

<210> 427  
<211> 378  
<212> DNA  
<213> Neisseria meningitidis

<400> 427  
atgtgtgagt tcaaggattt tagaagaaac atcccttggt ttgaagagta tgacgaaaat 60  
tcattttattg gcaaatggta tgatgacggg gtgtgggatg atgaagaata ttggaaattg 120  
gagaatgatt taatcgaggt tagaaaaaaa taticttatc cgatggatat accaagggat 180  
attgtgattg gaatcgggtac cattattgat tttttaatgg ttccaaattg ggagcttttt 240  
gaaattaaag cttccccttg gttgcctgat agtgtgggaa ttcataaacg ttatgaaaga 300  
ttcacaacga tgctccgtta tatttttacc gagaaagaca tagtcaacgt gcgatttgat 360  
tattacaaca aaaaatag 378

<210> 428  
<211> 125  
<212> PRT



<213> Neisseria meningitidis

<400> 428

```
Met Cys Glu Phe Lys Asp Phe Arg Arg Asn Ile Pro Cys Phe Glu Glu
  1             5             10             15

Tyr Asp Glu Asn Ser Phe Ile Gly Lys Trp Tyr Asp Asp Gly Val Trp
          20             25             30

Asp Asp Glu Glu Tyr Trp Lys Leu Glu Asn Asp Leu Ile Glu Val Arg
          35             40             45

Lys Lys Tyr Pro Tyr Pro Met Asp Ile Pro Arg Asp Ile Val Ile Gly
          50             55             60

Ile Gly Thr Ile Ile Asp Phe Leu Met Val Pro Asn Trp Glu Leu Phe
          65             70             75             80

Glu Ile Lys Ala Ser Pro Trp Leu Pro Asp Ser Val Gly Ile His Glu
          85             90             95

Arg Tyr Glu Arg Phe Thr Thr Met Leu Arg Tyr Ile Phe Thr Glu Lys
          100            105            110

Asp Ile Val Asn Val Arg Phe Asp Tyr Tyr Asn Lys Lys
          115            120            125
```

<210> 429

<211> 672

<212> DNA

<213> Neisseria gonorrhoeae

<400> 429

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atgatgaaga cttttaaaaa tatattttcc gccgccattt tgtccgccgc cctgccgtgc 60
gcgtatgcgg caaggctacc ccaatccgcc gtgctgcact attccggcag ctacggcatt 120
cccgccacga tgacatttga acgcagcggc aatgcttaca aaatcgtttc gacgattaaa 180
gtgccgctat acaatatccg tttcgaatcc ggcgggtacgg ttgtcggcaa taccctgcac 240
cctgcctact ataaagacat acgcagggggc aaactgtatg cggaagccaa attcgcgcac 300
ggcagcgtaa cctacggcaa agcggggcgag agcaaaaccg agcaaagccc caaggctatg 360
gatttgttca cgcttgccctg gcagttggcg gcaaatgaag cgaaactccc cccgggtctg 420
aaaatcacca acggcaaaaa actttattcc gtcggcgggc tgaataaggc gggtagggga 480
aaatacagca taggcggcgt ggaaaccgaa gtcgtcaa atcggggtgcg gcgcggcgac 540
gatacggtaa cgtatttctt cgcaccgtcc ctgaacaata ttccggcaca aatcggctat 600
accgacgacg gcaaaaccta tacgctgaag ctcaaatcgg tgcagatcaa cggacaggcc 660
gccaaaaccgt aa                                     672
```

<210> 430

<211> 223

<212> PRT

<213> Neisseria gonorrhoeae

<400> 430

```
Met Met Lys Thr Phe Lys Asn Ile Phe Ser Ala Ala Ile Leu Ser Ala
  1             5             10             15
```

Ala Leu Pro Cys Ala Tyr Ala Ala Arg Leu Pro Gln Ser Ala Val Leu  
                   20                                  25                                  30  
 His Tyr Ser Gly Ser Tyr Gly Ile Pro Ala Thr Met Thr Phe Glu Arg  
                   35                                  40                                  45  
 Ser Gly Asn Ala Tyr Lys Ile Val Ser Thr Ile Lys Val Pro Leu Tyr  
                   50                                  55                                  60  
 Asn Ile Arg Phe Glu Ser Gly Gly Thr Val Val Gly Asn Thr Leu His  
                   65                                  70                                  75                                  80  
 Pro Ala Tyr Tyr Lys Asp Ile Arg Arg Gly Lys Leu Tyr Ala Glu Ala  
                                   85                                  90                                  95  
 Lys Phe Ala Asp Gly Ser Val Thr Tyr Gly Lys Ala Gly Glu Ser Lys  
                                   100                                  105                                  110  
 Thr Glu Gln Ser Pro Lys Ala Met Asp Leu Phe Thr Leu Ala Trp Gln  
                   115                                  120                                  125  
 Leu Ala Ala Asn Asp Ala Lys Leu Pro Pro Gly Leu Lys Ile Thr Asn  
                   130                                  135                                  140  
 Gly Lys Lys Leu Tyr Ser Val Gly Gly Leu Asn Lys Ala Gly Thr Gly  
                   145                                  150                                  155                                  160  
 Lys Tyr Ser Ile Gly Gly Val Glu Thr Glu Val Val Lys Tyr Arg Val  
                                   165                                  170                                  175  
 Arg Arg Gly Asp Asp Thr Val Thr Tyr Phe Phe Ala Pro Ser Leu Asn  
                                   180                                  185                                  190  
 Asn Ile Pro Ala Gln Ile Gly Tyr Thr Asp Asp Gly Lys Thr Tyr Thr  
                   195                                  200                                  205  
 Leu Lys Leu Lys Ser Val Gln Ile Asn Gly Gln Ala Ala Lys Pro  
                   210                                  215                                  220

<210> 431

<211> 669

<212> DNA

<213> *Neisseria meningitidis*

<400> 431

atgatgaaga cttttaaaaa tatattttcc gccgccattt tgtcgcgcgc cctgccgtgc 60  
 gcgtatgcgg cagggctgcc ccaatccgcc gtgctgmact attccggcag ctacggcatt 120  
 cccgccacga tgacatttga acgcagcggc aatgcttaca aaatcgtttc gacgattaaa 180  
 gtgccgctat acaatatccg tttcgagtcg gccgggtacg ttgtcggcaa taccctgcac 240  
 cctacctact atagagacat acgcaggggc aaactgtatg cggaagccaa attcggcgac 300  
 ggcagcgtaa cttacggcaa agcgggcgag agcaaaaccg agcaaagccc caaggctatg 360  
 gatttgttca cgcttgccgt gcagttggcg gcaaatgacg cgaaactccc cccggggctg 420  
 aaaatcacca acggcaaaaa actttattcc gtcggcggtt tgaataaggc gggtagagga 480  
 aaatacagca taggcggcgt ggaaaccgaa gtcgtcaa atcggggtgc gcgcggcgac 540  
 gatgcggtaa tgtattttct cgcaccgtcc ctgaacaata ttccggcaca aatcggttat 600  
 accgacgacg gcaaaacctt tacgctgaaa ctcaaatcgg tgcagatcaa cggccaggca 660

<210> 432  
 <211> 223  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 432  
 Met Met Lys Thr Phe Lys Asn Ile Phe Ser Ala Ala Ile Leu Ser Ala  
   1                  5                  10                  15  
 Ala Leu Pro Cys Ala Tyr Ala Ala Gly Leu Pro Gln Ser Ala Val Leu  
           20                  25                  30  
 Xaa Tyr Ser Gly Ser Tyr Gly Ile Pro Ala Thr Met Thr Phe Glu Arg  
           35                  40                  45  
 Ser Gly Asn Ala Tyr Lys Ile Val Ser Thr Ile Lys Val Pro Leu Tyr  
       50                  55                  60  
 Asn Ile Arg Phe Glu Ser Gly Gly Thr Val Val Gly Asn Thr Leu His  
   65                  70                  75                  80  
 Pro Thr Tyr Tyr Arg Asp Ile Arg Arg Gly Lys Leu Tyr Ala Glu Ala  
                   85                  90                  95  
 Lys Phe Ala Asp Gly Ser Val Thr Tyr Gly Lys Ala Gly Glu Ser Lys  
           100                  105                  110  
 Thr Glu Gln Ser Pro Lys Ala Met Asp Leu Phe Thr Leu Ala Trp Gln  
       115                  120                  125  
 Leu Ala Ala Asn Asp Ala Lys Leu Pro Pro Gly Leu Lys Ile Thr Asn  
   130                  135                  140  
 Gly Lys Lys Leu Tyr Ser Val Gly Gly Leu Asn Lys Ala Gly Thr Gly  
 145                  150                  155                  160  
 Lys Tyr Ser Ile Gly Gly Val Glu Thr Glu Val Val Lys Tyr Arg Val  
           165                  170                  175  
 Arg Arg Gly Asp Asp Ala Val Met Tyr Phe Phe Ala Pro Ser Leu Asn  
           180                  185                  190  
 Asn Ile Pro Ala Gln Ile Gly Tyr Thr Asp Asp Gly Lys Thr Tyr Thr  
       195                  200                  205  
 Leu Lys Leu Lys Ser Val Gln Ile Asn Gly Gln Ala Ala Lys Pro  
   210                  215                  220

<210> 433  
 <211> 672  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 433

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atgatgaaga cttttaaaaa tatattttcc gccgccattt tgtccgccgc cctgccgtgc 60
gcgtatgagg cagggctgcc ccaatccgcc gtgctgcact attccggcag ctacggcatt 120
cccgccacga tgacatttga acgcagcggc aatgcttaca aaatcgtttc gacgattaaa 180
gtgccgctat acaatatccg ttctgagtcg gccgggtacgg ttgtcggcaa taccctgcac 240
cctacctact atagagacat acgcaggggc aaactgtatg cggaagccaa attcggcgac 300
ggcagcgtaa cctacggcaa agcggggcag agcaaaaccg agcaaagccc caaggctatg 360
gatttgttca cgcttgccctg gcagttggcg gcaaatgacg cgaaactccc cccggggctg 420
aaaatcacca acggcaaaaa actttattcc gtcggcggtt tgaataaggc gggtagagga 480
aaatacagca taggcggcgt ggaaaccgaa gtcgtcaa atcggggtgc gcgcggcgac 540
gatgcggtaa tgtatttctt cgcaccgtcc ctgaacaata ttccggcaca aatcggctat 600
accgacgacg gcaaaaccta tacgctgaaa ctcaaatcgg tgcagatcaa cggccaggca 660
gccaaaccgt aa 672
```

<210> 434

<211> 223

<212> PRT

<213> *Neisseria meningitidis*

<400> 434

```
Met Met Lys Thr Phe Lys Asn Ile Phe Ser Ala Ala Ile Leu Ser Ala
  1             5             10             15

Ala Leu Pro Cys Ala Tyr Ala Ala Gly Leu Pro Gln Ser Ala Val Leu
      20             25             30

His Tyr Ser Gly Ser Tyr Gly Ile Pro Ala Thr Met Thr Phe Glu Arg
      35             40             45

Ser Gly Asn Ala Tyr Lys Ile Val Ser Thr Ile Lys Val Pro Leu Tyr
      50             55             60

Asn Ile Arg Phe Glu Ser Gly Gly Thr Val Val Gly Asn Thr Leu His
      65             70             75             80

Pro Thr Tyr Tyr Arg Asp Ile Arg Arg Gly Lys Leu Tyr Ala Glu Ala
      85             90             95

Lys Phe Ala Asp Gly Ser Val Thr Tyr Gly Lys Ala Gly Glu Ser Lys
      100            105            110

Thr Glu Gln Ser Pro Lys Ala Met Asp Leu Phe Thr Leu Ala Trp Gln
      115            120            125

Leu Ala Ala Asn Asp Ala Lys Leu Pro Pro Gly Leu Lys Ile Thr Asn
      130            135            140

Gly Lys Lys Leu Tyr Ser Val Gly Gly Leu Asn Lys Ala Gly Thr Gly
      145            150            155            160

Lys Tyr Ser Ile Gly Gly Val Glu Thr Glu Val Val Lys Tyr Arg Val
      165            170            175

Arg Arg Gly Asp Asp Ala Val Met Tyr Phe Phe Ala Pro Ser Leu Asn
      180            185            190
```

Asn Ile Pro Ala Gln Ile Gly Tyr Thr Asp Asp Gly Lys Thr Tyr Thr  
 195 200 205

Leu Lys Leu Lys Ser Val Gln Ile Asn Gly Gln Ala Ala Lys Pro  
 210 215 220

<210> 435  
 <211> 1101  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 435  
 atggaaacac agctttacat cggcattatg tcgggaacca gtatggacgg ggcggatgcc 60  
 gtgctggtac ggatggacgg cggcaaattg ctgggcgcgg aagggcacgc ctttaccccc 120  
 taccctgacc gggtgcgccg caaattgctg gatttgcagg acacaggcac agacgaactg 180  
 caccgcagca ggatgttgct gcaagaactc agccgcctgt acgcgcaaac cgccgccgaa 240  
 ctgctgtgca gtcaaaacct cgctccgtgc gacattaccg ccctcggctg ccacgggcaa 300  
 accgtccgac acgcgcggga acacggttac agcatacagc ttgccgattt gccgctgctg 360  
 gcggaactga cgcggtttt taccgtcggc gacttccgca gccgcgacct tgctgccggc 420  
 ggacaagggt cgccgctcgt ccccgctttt cagcaagccc tgttccgcga tgacagggaa 480  
 acacgcgtgg tactgaacat cggcgggatt gccaacatca gcgtactccc ccccggcgca 540  
 cccgccttcg gcttcgacac agggccgggc aatatgctga tggacgcgtg gacgcaggca 600  
 cactggcagc tgccttacga caaaaacggt gcaaaggcgg cacaaggcaa catattgccg 660  
 caactgctcg gcaggctgct cgcccacccg tatttctcac aacccacccc aaaaagcacg 720  
 gggcgcgaaac tgtttgccct aaattggctc gaaacctacc ttgacggcgg cgaaaaccga 780  
 tacgacgtat tgcgagcgtt ttcccatttc accgcgcaaa ccgtttggga cgccgtctca 840  
 cagcagcggc cagatgcccg tcaaatgtac atttgcgggc gcggcatccg caatcctgtt 900  
 ttaatggcgg atttggcaga atgtttcggc acacgcgttt ccctgcacag caccgccgaa 960  
 ctgaacctcg atcctcaatg ggtggaggcg gccgcatttg cgtggttggc ggcgtgttgg 1020  
 attaaccgca ttcccggtag tccgcacaaa gcgaccggcg catccaaacc gtgtattctg 1080  
 ggcgcgggat attattattg a 1101

<210> 436  
 <211> 366  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 436  
 Met Glu Thr Gln Leu Tyr Ile Gly Ile Met Ser Gly Thr Ser Met Asp  
 1 5 10 15  
 Gly Ala Asp Ala Val Leu Val Arg Met Asp Gly Gly Lys Trp Leu Gly  
 20 25 30  
 Ala Glu Gly His Ala Phe Thr Pro Tyr Pro Asp Arg Leu Arg Arg Lys  
 35 40 45  
 Leu Leu Asp Leu Gln Asp Thr Gly Thr Asp Glu Leu His Arg Ser Arg  
 50 55 60  
 Met Leu Ser Gln Glu Leu Ser Arg Leu Tyr Ala Gln Thr Ala Ala Glu  
 65 70 75 80  
 Leu Leu Cys Ser Gln Asn Leu Ala Pro Cys Asp Ile Thr Ala Leu Gly

85								90				95				
Cys	His	Gly	Gln	Thr	Val	Arg	His	Ala	Pro	Glu	His	Gly	Tyr	Ser	Ile	
			100						105				110			
Gln	Leu	Ala	Asp	Leu	Pro	Leu	Leu	Ala	Glu	Leu	Thr	Arg	Ile	Phe	Thr	
		115					120					125				
Val	Gly	Asp	Phe	Arg	Ser	Arg	Asp	Leu	Ala	Ala	Gly	Gly	Gln	Gly	Ala	
	130					135					140					
Pro	Leu	Val	Pro	Ala	Phe	His	Glu	Ala	Leu	Phe	Arg	Asp	Asp	Arg	Glu	
145					150					155					160	
Thr	Arg	Val	Val	Leu	Asn	Ile	Gly	Gly	Ile	Ala	Asn	Ile	Ser	Val	Leu	
				165				170						175		
Pro	Pro	Gly	Ala	Pro	Ala	Phe	Gly	Phe	Asp	Thr	Gly	Pro	Gly	Asn	Met	
			180					185					190			
Leu	Met	Asp	Ala	Trp	Thr	Gln	Ala	His	Trp	Gln	Leu	Pro	Tyr	Asp	Lys	
		195					200					205				
Asn	Gly	Ala	Lys	Ala	Ala	Gln	Gly	Asn	Ile	Leu	Pro	Gln	Leu	Leu	Gly	
	210					215					220					
Arg	Leu	Leu	Ala	His	Pro	Tyr	Phe	Ser	Gln	Pro	His	Pro	Lys	Ser	Thr	
225					230					235					240	
Gly	Arg	Glu	Leu	Phe	Ala	Leu	Asn	Trp	Leu	Glu	Thr	Tyr	Leu	Asp	Gly	
				245				250						255		
Gly	Glu	Asn	Arg	Tyr	Asp	Val	Leu	Arg	Thr	Leu	Ser	Arg	Phe	Thr	Ala	
			260					265					270			
Gln	Thr	Val	Trp	Asp	Ala	Val	Ser	His	Ala	Ala	Ala	Asp	Ala	Arg	Gln	
		275					280					285				
Met	Tyr	Ile	Cys	Gly	Gly	Gly	Ile	Arg	Asn	Pro	Val	Leu	Met	Ala	Asp	
	290					295				300						
Leu	Ala	Glu	Cys	Phe	Gly	Thr	Arg	Val	Ser	Leu	His	Ser	Thr	Ala	Glu	
305					310					315					320	
Leu	Asn	Leu	Asp	Pro	Gln	Trp	Val	Glu	Ala	Ala	Ala	Phe	Ala	Trp	Leu	
				325				330						335		
Ala	Ala	Cys	Trp	Ile	Asn	Arg	Ile	Pro	Gly	Ser	Pro	His	Lys	Ala	Thr	
			340					345					350			
Gly	Ala	Ser	Lys	Pro	Cys	Ile	Leu	Gly	Ala	Gly	Tyr	Tyr	Tyr			
		355					360					365				

<210> 437

<211> 1101

<212> DNA

<213> Neisseria meningitidis

<400> 437

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gtactgatac ggatggacgg cggcaaattg ctgggcgcgg aagggcacgc ctttaccccc 120
taccgccgca ggttacgccg ccaattgctg gatttgcagg acacaggcgc agacgaactg 180
caccgcagca ggattttgtc gcaagaactc agccgcctat atgcgcaaac cgccgccgaa 240
ctgctgtgca gtcaaaacct cgcaccgtcc gacattaccg ccctcggctg ccacgggcaa 300
accgtccgac acgcgccgga acacggttac agcatacagc ttgccgattt gccgctgctg 360
gcgnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 420
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 480
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 540
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 600
nnnnnnncag ttccttacga caaaaacggt gcaaagtcgg cacaaggcaa catattgccg 660
caactgctcg acaggctgct cgcccacccg tatttcgcac aacgccaccc taaaagcacg 720
gggcgcgaac tgtttgccat aaattggctc gaaacctacc ttgacggcgg cgaaaaccga 780
tacgacgtat tgcggacgct ttcccgtttt accgcgcaaa ccgtttgcga cgccgtctca 840
cacgcagcgg cagatgcccg tcaaatgtac atttgcgacg gcggcatccg caatcctgtt 900
ttaatggcgg atttggcaga atgtttcggc acacgcgttt ccctgcacag caccgccgac 960
ctgaacctcg atccgcaatg ggtggaagcc gccgnatttg cgtggttggc ggcgtgttgg 1020
attaatcgca ttcccgttag tccgcacaaa gcaaccggcg catccaaacc gtgtattctg 1080
ancgcgggat attattattg a 1101
```

<210> 438

<211> 366

<212> PRT

<213> Neisseria meningitidis

<400> 438

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Met Glu Thr Gln Leu Tyr Ile Gly Ile Met Ser Gly Thr Ser Met Asp
  1              5              10              15

Gly Ala Asp Ala Val Leu Ile Arg Met Asp Gly Gly Lys Trp Leu Gly
      20              25              30

Ala Glu Gly His Ala Phe Thr Pro Tyr Pro Gly Arg Leu Arg Arg Gln
      35              40              45

Leu Leu Asp Leu Gln Asp Thr Gly Ala Asp Glu Leu His Arg Ser Arg
      50              55              60

Ile Leu Ser Gln Glu Leu Ser Arg Leu Tyr Ala Gln Thr Ala Ala Glu
      65              70              75              80

Leu Leu Cys Ser Gln Asn Leu Ala Pro Ser Asp Ile Thr Ala Leu Gly
      85              90              95

Cys His Gly Gln Thr Val Arg His Ala Pro Glu His Gly Tyr Ser Ile
      100             105             110

Gln Leu Ala Asp Leu Pro Leu Leu Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      115             120             125

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      130             135             140
```

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
145 150 155 160  
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
165 170 175  
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
180 185 190  
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gln Leu Pro Tyr Asp Lys  
195 200 205  
Asn Gly Ala Lys Ser Ala Gln Gly Asn Ile Leu Pro Gln Leu Leu Asp  
210 215 220  
Arg Leu Leu Ala His Pro Tyr Phe Ala Gln Arg His Pro Lys Ser Thr  
225 230 235 240  
Gly Arg Glu Leu Phe Ala Ile Asn Trp Leu Glu Thr Tyr Leu Asp Gly  
245 250 255  
Gly Glu Asn Arg Tyr Asp Val Leu Arg Thr Leu Ser Arg Phe Thr Ala  
260 265 270  
Gln Thr Val Cys Asp Ala Val Ser His Ala Ala Ala Asp Ala Arg Gln  
275 280 285  
Met Tyr Ile Cys Asp Gly Gly Ile Arg Asn Pro Val Leu Met Ala Asp  
290 295 300  
Leu Ala Glu Cys Phe Gly Thr Arg Val Ser Leu His Ser Thr Ala Asp  
305 310 315 320  
Leu Asn Leu Asp Pro Gln Trp Val Glu Ala Ala Xaa Phe Ala Trp Leu  
325 330 335  
Ala Ala Cys Trp Ile Asn Arg Ile Pro Gly Ser Pro His Lys Ala Thr  
340 345 350  
Gly Ala Ser Lys Pro Cys Ile Leu Xaa Ala Gly Tyr Tyr Tyr  
355 360 365

<210> 439  
<211> 1101  
<212> DNA  
<213> Neisseria meningitidis

<400> 439  
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gtactgatac ggatggacgg cggcaaatgg ctgggcgcgg aagggcacgc ctttaccccc 120  
taccocggca ggttacgccg caaattgctg gatttgacgg acacaggcgc ggacgaactg 180  
caccgcagca ggatgttgct gcaagaactc agccgcctgt acgcgcaaac cgccgccgaa 240  
ctgctgtgca gtcaaaacct cgcgccgtcc gacattaccg ccctcggctg ccacgggcaa 300  
accgtcagac acgcgccgga acacagttac agcgtacagc ttgccgattt gccgctgctg 360  
gcggaacgga ctcagatttt taccgtcggc gacttccgca gccgcgacct tgcggccggc 420  
ggacaaggcg cgccgctcgt cccgccttt cacgaagccc tgttccgcga cgacagggaa 480



```

acacgcgcgg tactgaacat cggcgggatt gccaacatca gcgtactccc ccccgacgca 540
cccgcttcg gcttcgacac aggaccgggc aatatgctga tggacgcgtg gatgcaggca 600
cactggcagc ttccttacga caaaaacggt gcaaaggcgg cacaaggcaa catattgccg 660
caactgctcg acaggctgct cgcccacccg tatttcgcac aacccacccc taaaagcacg 720
gggcgcgaac tgtttgccct aaattggctc gaaacctacc ttgacggcgg cgaaaaccga 780
tacgacgtat tgcggacgct ttcccgattc accgcgcaaa ccgttttcga cgccgtctca 840
cacgcagcgg cagatgcccg tcaaattgtac atttgcggcg gcggcatccg caatcctggt 900
ttaatggcgg atttggcaga atgtttcggc acacgcgttt ccctgcacag caccgccgaa 960
ctgaacctcg atccgcaatg ggtagaagcc gccgcgttcg catggatggc ggcgtgttgg 1020
gtcaaccgca ttcccggtag tccgcacaaa gcaaccggcg catccaaacc gtgtattctg 1080
ggcgcgggat attattattg a 1101

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<210> 440

<211> 366

<212> PRT

<213> *Neisseria meningitidis*

<400> 440

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Met Glu Thr Gln Leu Tyr Ile Gly Ile Met Ser Gly Thr Ser Met Asp
  1             5             10             15

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Gly Ala Asp Ala Val Leu Ile Arg Met Asp Gly Gly Lys Trp Leu Gly
          20             25             30

```

```

Ala Glu Gly His Ala Phe Thr Pro Tyr Pro Gly Arg Leu Arg Arg Lys
          35             40             45

```

```

Leu Leu Asp Leu Gln Asp Thr Gly Ala Asp Glu Leu His Arg Ser Arg
          50             55             60

```

```

Met Leu Ser Gln Glu Leu Ser Arg Leu Tyr Ala Gln Thr Ala Ala Glu
          65             70             75             80

```

```

Leu Leu Cys Ser Gln Asn Leu Ala Pro Ser Asp Ile Thr Ala Leu Gly
          85             90             95

```

```

Cys His Gly Gln Thr Val Arg His Ala Pro Glu His Ser Tyr Ser Val
          100            105            110

```

```

Gln Leu Ala Asp Leu Pro Leu Leu Ala Glu Arg Thr Gln Ile Phe Thr
          115            120            125

```

```

Val Gly Asp Phe Arg Ser Arg Asp Leu Ala Ala Gly Gly Gln Gly Ala
          130            135            140

```

```

Pro Leu Val Pro Ala Phe His Glu Ala Leu Phe Arg Asp Asp Arg Glu
          145            150            155            160

```

```

Thr Arg Ala Val Leu Asn Ile Gly Gly Ile Ala Asn Ile Ser Val Leu
          165            170            175

```

```

Pro Pro Asp Ala Pro Ala Phe Gly Phe Asp Thr Gly Pro Gly Asn Met
          180            185            190

```

```

Leu Met Asp Ala Trp Met Gln Ala His Trp Gln Leu Pro Tyr Asp Lys
          195            200            205

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Asn Gly Ala Lys Ala Ala Gln Gly Asn Ile Leu Pro Gln Leu Leu Asp  
 210 215 220  
 Arg Leu Leu Ala His Pro Tyr Phe Ala Gln Pro His Pro Lys Ser Thr  
 225 230 235 240  
 Gly Arg Glu Leu Phe Ala Leu Asn Trp Leu Glu Thr Tyr Leu Asp Gly  
 245 250 255  
 Gly Glu Asn Arg Tyr Asp Val Leu Arg Thr Leu Ser Arg Phe Thr Ala  
 260 265 270  
 Gln Thr Val Phe Asp Ala Val Ser His Ala Ala Ala Asp Ala Arg Gln  
 275 280 285  
 Met Tyr Ile Cys Gly Gly Gly Ile Arg Asn Pro Val Leu Met Ala Asp  
 290 295 300  
 Leu Ala Glu Cys Phe Gly Thr Arg Val Ser Leu His Ser Thr Ala Glu  
 305 310 315 320  
 Leu Asn Leu Asp Pro Gln Trp Val Glu Ala Ala Ala Phe Ala Trp Met  
 325 330 335  
 Ala Ala Cys Trp Val Asn Arg Ile Pro Gly Ser Pro His Lys Ala Thr  
 340 345 350  
 Gly Ala Ser Lys Pro Cys Ile Leu Gly Ala Gly Tyr Tyr Tyr  
 355 360 365

<210> 441  
 <211> 1101  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 441  
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 gtactgatac ggatggacgg cggcaaatgg ctgggcgcgg aagggcacgc ctttaccccc 120  
 taccocggca ggttacgccg ccaattgctg gatttgcagg acacaggcgc agacgaactg 180  
 caccgcagca ggattttgtc gcaagaactc agccgcctat atgcgcaaac cgccgccgaa 240  
 ctgctgtgca gtcaaaacct cgcaccgtcc gacattaccg ccctcggctg ccacgggcaa 300  
 accgtccgac acgcgccgga acacggttac agcatacagc ttgccgattt gccgctgctg 360  
 gcggaacgga cgcggatttt taccgtcggc gacttccgca gccgcgacct tgcggccggc 420  
 ggacaaggcg cgccactcgt ccccgcttt caggaagccc tgttccgca caacagggaa 480  
 acacgcgcgg tactgaacat cggcgggatt gccaaacatca gcgtactccc ccccgacgca 540  
 cccgccttcg gcttcgacac agggccgggc aatatgctga tggacgcgtg gacgcaggca 600  
 cactggcagc ttccttacga caaaaacggt gcaaaggcgg cacaaggcaa catattgccg 660  
 caactgctcg acaggctgct cgcccacccg tatttcgcac aacccccacc taaaagcacg 720  
 gggcgcgaac tgtttgccct aaattggctc gaaacctacc ttgacggcgg cgaaaaccga 780  
 tacgacgtat tgcggacgct ttcccgtttt accgcgcaaa ccgtttgcga cgccgtctca 840  
 cagcagcgg cagatgcccg tcaaatgtac atttgcggcg gcggcatccg caatcctgtt 900  
 ttaatggcgg atttggcaga atgtttcggc acacgcgttt ccctgcacag caccgccgac 960  
 ctgaacctcg atccgcaatg ggtggaagcc gccgnatttg cgtggttggc ggcgtgttgg 1020  
 attaatcgga ttcccggtag tccgcacaaa gcaaccggcg catccaaacc gtgtattctg 1080  
 ancgcgggat attattattg a 1101

<210> 442  
<211> 366  
<212> PRT  
<213> Neisseria meningitidis

<400> 442  
Met Glu Thr Gln Leu Tyr Ile Gly Ile Met Ser Gly Thr Ser Met Asp  
1 5 10 15  
Gly Ala Asp Ala Val Leu Ile Arg Met Asp Gly Gly Lys Trp Leu Gly  
20 25 30  
Ala Glu Gly His Ala Phe Thr Pro Tyr Pro Gly Arg Leu Arg Arg Gln  
35 40 45  
Leu Leu Asp Leu Gln Asp Thr Gly Ala Asp Glu Leu His Arg Ser Arg  
50 55 60  
Ile Leu Ser Gln Glu Leu Ser Arg Leu Tyr Ala Gln Thr Ala Ala Glu  
65 70 75 80  
Leu Leu Cys Ser Gln Asn Leu Ala Pro Ser Asp Ile Thr Ala Leu Gly  
85 90 95  
Cys His Gly Gln Thr Val Arg His Ala Pro Glu His Gly Tyr Ser Ile  
100 105 110  
Gln Leu Ala Asp Leu Pro Leu Leu Ala Glu Arg Thr Arg Ile Phe Thr  
115 120 125  
Val Gly Asp Phe Arg Ser Arg Asp Leu Ala Ala Gly Gly Gln Gly Ala  
130 135 140  
Pro Leu Val Pro Ala Phe His Glu Ala Leu Phe Arg Asp Asn Arg Glu  
145 150 155 160  
Thr Arg Ala Val Leu Asn Ile Gly Gly Ile Ala Asn Ile Ser Val Leu  
165 170 175  
Pro Pro Asp Ala Pro Ala Phe Gly Phe Asp Thr Gly Pro Gly Asn Met  
180 185 190  
Leu Met Asp Ala Trp Thr Gln Ala His Trp Gln Leu Pro Tyr Asp Lys  
195 200 205  
Asn Gly Ala Lys Ala Ala Gln Gly Asn Ile Leu Pro Gln Leu Leu Asp  
210 215 220  
Arg Leu Leu Ala His Pro Tyr Phe Ala Gln Pro His Pro Lys Ser Thr  
225 230 235 240  
Gly Arg Glu Leu Phe Ala Leu Asn Trp Leu Glu Thr Tyr Leu Asp Gly  
245 250 255

Gly Glu Asn Arg Tyr Asp Val Leu Arg Thr Leu Ser Arg Phe Thr Ala  
                   260                                  265                                  270  
 Gln Thr Val Cys Asp Ala Val Ser His Ala Ala Ala Asp Ala Arg Gln  
                   275                                  280                                  285  
 Met Tyr Ile Cys Gly Gly Gly Ile Arg Asn Pro Val Leu Met Ala Asp  
                   290                                  295                                  300  
 Leu Ala Glu Cys Phe Gly Thr Arg Val Ser Leu His Ser Thr Ala Asp  
                   305                                  310                                  315                                  320  
 Leu Asn Leu Asp Pro Gln Trp Val Glu Ala Ala Xaa Phe Ala Trp Leu  
                                   325                                  330                                  335  
 Ala Ala Cys Trp Ile Asn Arg Ile Pro Gly Ser Pro His Lys Ala Thr  
                   340                                  345                                  350  
 Gly Ala Ser Lys Pro Cys Ile Leu Xaa Ala Gly Tyr Tyr Tyr  
                   355                                  360                                  365

<210> 443  
 <211> 1101  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 443  
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 gtactgatac ggatggacgg cggcaaatgg ctgggcgcgg aagggcacgc ctttaccccc 120  
 taccocggca ggttacgccg caaattgctg gatttgcagg acacaggcgc ggacgaactg 180  
 caccgcagca ggatgttgtc gcaagaactc agccgcctgt acgcgcaaac cgccgccgaa 240  
 ctgctgtgca gtcaaaacct cgcgcggtcc gacattaccg ccctcggtctg ccacgggcaa 300  
 accgtcagac acgcgcggga acacagttac agcgtacagc ttgccgattt gccgctgctg 360  
 gcggaacgga ctcagatttt taccgtcggc gacttccgca gccgcgacct tgcggccggc 420  
 ggacaaggcg cgccgctcgt cccgcctttt cacgaagccc tgttccgcga cgacagggaa 480  
 acacgcgcgg tactgaacat cggcgggatt gccaacatca gcgtactccc cccgcagca 540  
 cccgccttcg gcttcgacac aggaccgggc aatatgctga tggacgcgtg gatgcaggca 600  
 cactggcagc ttccttacga caaaaacggt gcaaaggcgg cacaaggcaa catattgccg 660  
 caactgctcg acaggtctg cgcccacccg tatttcgcac aacccacccc taaaagcacg 720  
 gggcgcgaac tgtttgccct aaattggctc gaaacctacc ttgacggcgg cgaaaaccga 780  
 tacgacgtat tgcggacgct ttcccgattc accgcgcaaa ccgttttcga cgccgtctca 840  
 cacgcagcgg cagatgcccg tcaaattgtac atttgcggcg gcggcatccg caatcctggt 900  
 ttaatggcgg atttggcaga atgtttcggc acacgcgttt ccctgcacag caccgccgaa 960  
 ctgaacctcg atccgcaatg ggtagaagcc gccgcgttcg catggatggc ggcgtgttgg 1020  
 gtcaaccgca ttcccggtag tccgcacaaa gcaaccggcg catccaaacc gtgtattctg 1080  
 ggcgcgggat attattattg a 1101

<210> 444  
 <211> 366  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 444  
 Met Glu Thr Gln Leu Tyr Ile Gly Ile Met Ser Gly Thr Ser Met Asp  
       1                                  5                                  10                                  15

Gly	Ala	Asp	Ala	Val	Leu	Ile	Arg	Met	Asp	Gly	Gly	Lys	Trp	Leu	Gly	20	25	30	
Ala	Glu	Gly	His	Ala	Phe	Thr	Pro	Tyr	Pro	Gly	Arg	Leu	Arg	Arg	Lys	35	40	45	
Leu	Leu	Asp	Leu	Gln	Asp	Thr	Gly	Ala	Asp	Glu	Leu	His	Arg	Ser	Arg	50	55	60	
Met	Leu	Ser	Gln	Glu	Leu	Ser	Arg	Leu	Tyr	Ala	Gln	Thr	Ala	Ala	Glu	65	70	75	80
Leu	Leu	Cys	Ser	Gln	Asn	Leu	Ala	Pro	Ser	Asp	Ile	Thr	Ala	Leu	Gly	85	90	95	
Cys	His	Gly	Gln	Thr	Val	Arg	His	Ala	Pro	Glu	His	Ser	Tyr	Ser	Val	100	105	110	
Gln	Leu	Ala	Asp	Leu	Pro	Leu	Leu	Ala	Glu	Arg	Thr	Gln	Ile	Phe	Thr	115	120	125	
Val	Gly	Asp	Phe	Arg	Ser	Arg	Asp	Leu	Ala	Ala	Gly	Gly	Gln	Gly	Ala	130	135	140	
Pro	Leu	Val	Pro	Ala	Phe	His	Glu	Ala	Leu	Phe	Arg	Asp	Asp	Arg	Glu	145	150	155	160
Thr	Arg	Ala	Val	Leu	Asn	Ile	Gly	Gly	Ile	Ala	Asn	Ile	Ser	Val	Leu	165	170	175	
Pro	Pro	Asp	Ala	Pro	Ala	Phe	Gly	Phe	Asp	Thr	Gly	Pro	Gly	Asn	Met	180	185	190	
Leu	Met	Asp	Ala	Trp	Met	Gln	Ala	His	Trp	Gln	Leu	Pro	Tyr	Asp	Lys	195	200	205	
Asn	Gly	Ala	Lys	Ala	Ala	Gln	Gly	Asn	Ile	Leu	Pro	Gln	Leu	Leu	Asp	210	215	220	
Arg	Leu	Leu	Ala	His	Pro	Tyr	Phe	Ala	Gln	Pro	His	Pro	Lys	Ser	Thr	225	230	235	240
Gly	Arg	Glu	Leu	Phe	Ala	Leu	Asn	Trp	Leu	Glu	Thr	Tyr	Leu	Asp	Gly	245	250	255	
Gly	Glu	Asn	Arg	Tyr	Asp	Val	Leu	Arg	Thr	Leu	Ser	Arg	Phe	Thr	Ala	260	265	270	
Gln	Thr	Val	Phe	Asp	Ala	Val	Ser	His	Ala	Ala	Ala	Asp	Ala	Arg	Gln	275	280	285	
Met	Tyr	Ile	Cys	Gly	Gly	Gly	Ile	Arg	Asn	Pro	Val	Leu	Met	Ala	Asp	290	295	300	
Leu	Ala	Glu	Cys	Phe	Gly	Thr	Arg	Val	Ser	Leu	His	Ser	Thr	Ala	Glu				

305                      310                      315                      320

Leu Asn Leu Asp Pro Gln Trp Val Glu Ala Ala Ala Phe Ala Trp Met  
                                  325                      330                      335

Ala Ala Cys Trp Val Asn Arg Ile Pro Gly Ser Pro His Lys Ala Thr  
                                  340                      345                      350

Gly Ala Ser Lys Pro Cys Ile Leu Gly Ala Gly Tyr Tyr Tyr  
                                  355                      360                      365

<210> 445  
 <211> 732  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 445  
 atggcttttac tgagcatccg caagctgcac aaacaatacg gcagcgtaac cgccatccaa 60  
 tccttagact tggacttggg aaaaggcgaa gtcatcgtag tgctggggccc gtccgggtgc 120  
 ggcaaatacca cctcctgcg ctgcgtcaac ggtttggagc cgcaccaagg cggcagcatc 180  
 gtgatggacg gtgtcggcga attcggcaaa gacgtttcct ggcaaaccgc ccggcaaaaa 240  
 gtcggtatgg tctttcaaag taacgaactg tttgcccaca tgaccgcatc cgaaaacatc 300  
 ttcttaggcc cggtaaagga acaaaaccgc gaccgtgccg aagcagaggc gcaagccggc 360  
 aaactgttgg aacgcgtcgg actgctagac cgcaaaaacg cctatccgcg cgaactttcc 420  
 ggcggtcaga aacagcgcac cgccattgtc cgcgccctgt gcctgaatcc ggaagtcatc 480  
 ctgctggacg aaatcaccgc cgcacttgac cccgaaatgg tgcgcgaagt cttggaagtg 540  
 gttttggaac tcgcccgcga agggatgagt atgctcatcg taaccacga aatggggttc 600  
 gcacgcaaag ttgccgaccg catcgtcttt atggacaaag gcggcatcgt cgaatcgtcc 660  
 gaccccgaaa cctttttttc cgcacaaaaa agcgaacgcg cccgccaatt tctggcaggt 720  
 atggactact ga 732

<210> 446  
 <211> 243  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 446  
 Met Ala Leu Leu Ser Ile Arg Lys Leu His Lys Gln Tyr Gly Ser Val  
   1                      5                      10                      15

Thr Ala Ile Gln Ser Leu Asp Leu Asp Leu Glu Lys Gly Glu Val Ile  
                                  20                      25                      30

Val Leu Leu Gly Pro Ser Gly Cys Gly Lys Ser Thr Leu Leu Arg Cys  
                                  35                      40                      45

Val Asn Gly Leu Glu Pro His Gln Gly Gly Ser Ile Val Met Asp Gly  
                                  50                      55                      60

Val Gly Glu Phe Gly Lys Asp Val Ser Trp Gln Thr Ala Arg Gln Lys  
                                  65                      70                      75                      80

Val Gly Met Val Phe Gln Ser Asn Glu Leu Phe Ala His Met Thr Val  
                                  85                      90                      95

Ile	Glu	Asn	Ile	Phe	Leu	Gly	Pro	Val	Lys	Glu	Gln	Asn	Arg	Asp	Arg
			100					105					110		
Ala	Glu	Ala	Glu	Ala	Gln	Ala	Gly	Lys	Leu	Leu	Glu	Arg	Val	Gly	Leu
			115				120					125			
Leu	Asp	Arg	Lys	Asn	Ala	Tyr	Pro	Arg	Glu	Leu	Ser	Gly	Gly	Gln	Lys
			130			135					140				
Gln	Arg	Ile	Ala	Ile	Val	Arg	Ala	Leu	Cys	Leu	Asn	Pro	Glu	Val	Ile
145					150					155					160
Leu	Leu	Asp	Glu	Ile	Thr	Ala	Ala	Leu	Asp	Pro	Glu	Met	Val	Arg	Glu
				165					170					175	
Val	Leu	Glu	Val	Val	Leu	Glu	Leu	Ala	Arg	Glu	Gly	Met	Ser	Met	Leu
				180				185						190	
Ile	Val	Thr	His	Glu	Met	Gly	Phe	Ala	Arg	Lys	Val	Ala	Asp	Arg	Ile
			195				200					205			
Val	Phe	Met	Asp	Lys	Gly	Gly	Ile	Val	Glu	Ser	Ser	Asp	Pro	Glu	Thr
			210			215					220				
Phe	Phe	Ser	Ala	Pro	Lys	Ser	Glu	Arg	Ala	Arg	Gln	Phe	Leu	Ala	Gly
225					230					235					240
Met Asp Tyr															

<210> 447  
 <211> 762  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 447  
 gttgtcatga ttaaaatccg caatatccat aagacctttg gcgaaaacac tattttgctc 60  
 ggcacgcgatt tggatgtgtg caaagggcag gtgggtcgta tcctcgggcc ttccggctca 120  
 ggcaaaacga cgtttctgcg atgcctaaac gcgttggaag tgcccgaaga cggacaaatc 180  
 gagttcgaca acgagcgacc gctgaaaatc gatttttcta aaaaaccaag caaacacgat 240  
 attttggcac tgcgccgcaa atcakgcatg gtgtttcaac aatacaayct ctttccgcac 300  
 aaaaccgcct tggaaaacgt aatggaagga ccggttgccg tacagggcaa gcctgccgcc 360  
 caagcgcgcg aagaggctct gaaactgctg gaaaaagtcg gcttgggcga caaagtggat 420  
 ttgtatccct accagctttc cggcggtcag cagcagcgcg tcggcattgc ccgcgcattg 480  
 gcgattcagc ctgaactgat gctgtttgac gaaccgactt ccgcgctcga tcctgaattg 540  
 gtgcaagatg ttttggatmc catgaaggaa ttggcgcaag aaggctggac catggttgtc 600  
 gttacgcatg aaatcaagtt cgccttagaa gtggcaacca ccgwcgctgt gatggacrgc 660  
 ggcgttattg tcgaacaagg cagcccgcaa gatttgctcg accaccccaa acacgaacgg 720  
 acgcggagat ttttaagcca aatccaatct accaagattt ga 762

<210> 448  
 <211> 253  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 448

Val Val Met Ile Lys Ile Arg Asn Ile His Lys Thr Phe Gly Glu Asn  
1 5 10 15

Thr Ile Leu Arg Gly Ile Asp Leu Asp Val Cys Lys Gly Gln Val Val  
20 25 30

Val Ile Leu Gly Pro Ser Gly Ser Gly Lys Thr Thr Phe Leu Arg Cys  
35 40 45

Leu Asn Ala Leu Glu Met Pro Glu Asp Gly Gln Ile Glu Phe Asp Asn  
50 55 60

Glu Arg Pro Leu Lys Ile Asp Phe Ser Lys Lys Pro Ser Lys His Asp  
65 70 75 80

Ile Leu Ala Leu Arg Arg Lys Ser Xaa Met Val Phe Gln Gln Tyr Asn  
85 90 95

Leu Phe Pro His Lys Thr Ala Leu Glu Asn Val Met Glu Gly Pro Val  
100 105 110

Ala Val Gln Gly Lys Pro Ala Ala Gln Ala Arg Glu Glu Ala Leu Lys  
115 120 125

Leu Leu Glu Lys Val Gly Leu Gly Asp Lys Val Asp Leu Tyr Pro Tyr  
130 135 140

Gln Leu Ser Gly Gly Gln Gln Arg Val Gly Ile Ala Arg Ala Leu  
145 150 155 160

Ala Ile Gln Pro Glu Leu Met Leu Phe Asp Glu Pro Thr Ser Ala Leu  
165 170 175

Asp Pro Glu Leu Val Gln Asp Val Leu Asp Xaa Met Lys Glu Leu Ala  
180 185 190

Gln Glu Gly Trp Thr Met Val Val Val Thr His Glu Ile Lys Phe Ala  
195 200 205

Leu Glu Val Ala Thr Thr Xaa Val Val Met Asp Xaa Gly Val Ile Val  
210 215 220

Glu Gln Gly Ser Pro Gln Asp Leu Phe Asp His Pro Lys His Glu Arg  
225 230 235 240

Thr Arg Arg Phe Leu Ser Gln Ile Gln Ser Thr Lys Ile  
245 250

<210> 449

<211> 762

<212> DNA

<213> *Neisseria meningitidis*

<400> 449

gttgtcatga ttaaaatccg caatatccat aagaccttcg gcaaaaatac cattttgcgc 60



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ggcatcaatt tggatgtgtg caaagggcag gtgggtcgtca tcctcggggc ttccgggtca 120
ggcaaaacga cgtttctgcg atgcctaaac gcgttggaag tgcccgaaga cggacaaatc 180
gagttcgaca acgagcgacc gctgaaaatc gatttttcta aaaaaccaag caaacacgat 240
attttggcac tgcgccgcaa atcaggcatg gtgtttcaac aatacaacct ctttccgcac 300
aaaaccgcct tggaaaacgt gatggaagga ccggttgccg tacagggcaa gcctgccgcc 360
caagcgcgcg aagaggctct gaaactgctg gaaaaagtgc gcttggggcg caaagtggat 420
ttgtatccct accagctttc cggcggtcag cagcagcgcg tcggcattgc ccgagcattg 480
gcgattcagc ccgagctgat gttgtttgac gaaccactt ccgcgcttga ccccgagttg 540
gtgcaagacg tgttgaacgc catgaaggaa ttggcgcggg aaggttggac gatggtcgtc 600
gttaccacag aaatcaagtt cgcgctggaa gttgccacga ccgttgctgt gatggacggc 660
ggcgttatcg tagagcaggg cagcccgaag gagttgttcg accaccccaa acacgaacgg 720
acgcggagat ttttaagcca aatccaatct accaagattt ga 762

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<210> 450

<211> 253

<212> PRT

<213> *Neisseria meningitidis*

<400> 450

```

Val Val Met Ile Lys Ile Arg Asn Ile His Lys Thr Phe Gly Lys Asn
  1             5             10             15

```

```

Thr Ile Leu Arg Gly Ile Asn Leu Asp Val Cys Lys Gly Gln Val Val
      20             25             30

```

```

Val Ile Leu Gly Pro Ser Gly Ser Gly Lys Thr Thr Phe Leu Arg Cys
      35             40             45

```

```

Leu Asn Ala Leu Glu Met Pro Glu Asp Gly Gln Ile Glu Phe Asp Asn
      50             55             60

```

```

Glu Arg Pro Leu Lys Ile Asp Phe Ser Lys Lys Pro Ser Lys His Asp
      65             70             75             80

```

```

Ile Leu Ala Leu Arg Arg Lys Ser Gly Met Val Phe Gln Gln Tyr Asn
      85             90             95

```

```

Leu Phe Pro His Lys Thr Ala Leu Glu Asn Val Met Glu Gly Pro Val
      100            105            110

```

```

Ala Val Gln Gly Lys Pro Ala Ala Gln Ala Arg Glu Glu Ala Leu Lys
      115            120            125

```

```

Leu Leu Glu Lys Val Gly Leu Gly Asp Lys Val Asp Leu Tyr Pro Tyr
      130            135            140

```

```

Gln Leu Ser Gly Gly Gln Gln Gln Arg Val Gly Ile Ala Arg Ala Leu
      145            150            155            160

```

```

Ala Ile Gln Pro Glu Leu Met Leu Phe Asp Glu Pro Thr Ser Ala Leu
      165            170            175

```

```

Asp Pro Glu Leu Val Gln Asp Val Leu Asn Ala Met Lys Glu Leu Ala
      180            185            190

```

```

Arg Glu Gly Trp Thr Met Val Val Val Thr His Glu Ile Lys Phe Ala

```



Pro His Lys Thr Val Leu Glu Asn Val Met Glu Gly Pro Val Ala Val  
 100 105 110  
 Gln Gly Lys Pro Ala Ala Gln Ala Arg Glu Glu Ala Leu Lys Leu Leu  
 115 120 125  
 Glu Lys Val Gly Leu Gly Asp Lys Val Asp Leu Tyr Pro Tyr Gln Leu  
 130 135 140  
 Ser Gly Gly Gln Gln Gln Arg Val Gly Ile Ala Arg Ala Leu Ala Ile  
 145 150 155 160  
 Gln Pro Glu Leu Met Leu Phe Asp Glu Pro Thr Ser Ala Leu Asp Pro  
 165 170 175  
 Glu Leu Val Gln Asp Val Leu Asp Ala Met Lys Glu Leu Ala Arg Glu  
 180 185 190  
 Gly Trp Thr Met Val Val Val Thr His Glu Ile Lys Phe Thr Leu Glu  
 195 200 205  
 Val Ala Thr Asn Val Val Val Met Asp Gly Gly Val Ile Val Glu Gln  
 210 215 220  
 Gly Ser Pro Lys Glu Leu Phe Asp His Leu Lys His Glu Arg Thr Arg  
 225 230 235 240  
 Arg Phe Leu Ser Gln Ile Gln Ser Ala Lys Ile  
 245 250

<210> 453  
 <211> 756  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 453  
 atgattaaaaa tccgcaatat ccataagacc tttggcgaaa acactatattt gcgcggcatc 60  
 gatttgatg tgtgcaaagg gcaggtggtc gtcattcctcg ggccttccgg ctcaggcaaa 120  
 acgacgtttc tgcgatgcct aaacgcgttg gaaatgcccg aagacggaca aatcgagttc 180  
 gacaacgagc gaccgctgaa aatcgatttt tctaaaaaac caagcaaaca cgatattttg 240  
 gactgcgcc gcaaatcagg catggtgttt caacaataca acctctttcc gcacaaaacc 300  
 gccttgaaa acgtaatgga aggaccggtt gccgtacagg gcaagcctgc cgcccaagcg 360  
 cgcgaaagagg ctctgaaact gctggaaaaa gtcggcttgg gcgacaaagt ggatttgtat 420  
 ccctaccagc tttccggcgg tcagcagcag cgcgtcggca ttgcccgcgc attggcgatt 480  
 cagcctgaac tgatgctgtt tgacgaaccg acttccgcgc tcgactctga attggtgcaa 540  
 gatgttttgg ataccatgaa ggaattggcg caagaaggct ggaccatggt tgtcgttacg 600  
 catgaaatca agttcgcctt agaagtggca accaccgtcg tcgtgatgga cggcggcggt 660  
 attgtcgaac aaggcagccc gcaagatttg ttcgaccacc ccaaacacga acggacgcgg 720  
 agatttttaa gccaaatcca atctaccaag atttga 756

<210> 454  
 <211> 251  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 454

Met Ile Lys Ile Arg Asn Ile His Lys Thr Phe Gly Glu Asn Thr Ile  
1 5 10 15  
Leu Arg Gly Ile Asp Leu Asp Val Cys Lys Gly Gln Val Val Val Ile  
20 25 30  
Leu Gly Pro Ser Gly Ser Gly Lys Thr Thr Phe Leu Arg Cys Leu Asn  
35 40 45  
Ala Leu Glu Met Pro Glu Asp Gly Gln Ile Glu Phe Asp Asn Glu Arg  
50 55 60  
Pro Leu Lys Ile Asp Phe Ser Lys Lys Pro Ser Lys His Asp Ile Leu  
65 70 75 80  
Ala Leu Arg Arg Lys Ser Gly Met Val Phe Gln Gln Tyr Asn Leu Phe  
85 90 95  
Pro His Lys Thr Ala Leu Glu Asn Val Met Glu Gly Pro Val Ala Val  
100 105 110  
Gln Gly Lys Pro Ala Ala Gln Ala Arg Glu Glu Ala Leu Lys Leu Leu  
115 120 125  
Glu Lys Val Gly Leu Gly Asp Lys Val Asp Leu Tyr Pro Tyr Gln Leu  
130 135 140  
Ser Gly Gly Gln Gln Gln Arg Val Gly Ile Ala Arg Ala Leu Ala Ile  
145 150 155 160  
Gln Pro Glu Leu Met Leu Phe Asp Glu Pro Thr Ser Ala Leu Asp Pro  
165 170 175  
Glu Leu Val Gln Asp Val Leu Asp Thr Met Lys Glu Leu Ala Gln Glu  
180 185 190  
Gly Trp Thr Met Val Val Val Thr His Glu Ile Lys Phe Ala Leu Glu  
195 200 205  
Val Ala Thr Thr Val Val Val Met Asp Gly Gly Val Ile Val Glu Gln  
210 215 220  
Gly Ser Pro Gln Asp Leu Phe Asp His Pro Lys His Glu Arg Thr Arg  
225 230 235 240  
Arg Phe Leu Ser Gln Ile Gln Ser Thr Lys Ile  
245 250

<210> 455

<211> 756

<212> DNA

<213> *Neisseria meningitidis*

<400> 455

atgattaaaa tccgcaatat ccataagacc ttccggcaaaa ataccatttt gcgcggcatc 60

```

aatttggatg tgtgcaaagg gcaggtggtc gtcacccctcg ggccttccgg ctcaggcaaa 120
acgacgtttc tgcgatgcct aaacgcgttg gaaatgcccg aagacggaca aatcgagttc 180
gacaacgagc gaccgctgaa aatcgatttt tctaaaaaac caagcaaaca cgatattttg 240
gcactgcgcc gcaaatacagg catggtgttt caacaataca acctctttcc gcacaaaacc 300
gccttgaaaa acgtgatgga aggaccggtt gccgtacagg gcaagcctgc cgccaagcg 360
cgcgaaagagg ctctgaaact gctggaaaaa gtcggcttgg gcgacaaagt ggatttgat 420
ccctaccagc tttccggcgg tcagcagcag cgcgtcggca ttgcccagagc attggcgatt 480
cagcccagagc tgatgttggt tgacgaaccc acttccgcgc ttgaccgca gttggtgcaa 540
gacgtgttga acgccatgaa ggaattggcg cgggaagggt ggacgatggt cgtcgttacc 600
cacgaaatca agttcgcgct ggaagttgcc acgaccgttg tcgtgatgga cggcggcggt 660
atcgtagagc agggcagccc gaaagagttg ttcgaccacc ccaaacacga acggacgcgg 720
agatttttaa gccaaatcca atctaccaag atttga 756

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<210> 456

<211> 251

<212> PRT

<213> *Neisseria meningitidis*

<400> 456

```

Met Ile Lys Ile Arg Asn Ile His Lys Thr Phe Gly Lys Asn Thr Ile
  1             5             10             15

Leu Arg Gly Ile Asn Leu Asp Val Cys Lys Gly Gln Val Val Val Ile
      20             25             30

Leu Gly Pro Ser Gly Ser Gly Lys Thr Thr Phe Leu Arg Cys Leu Asn
      35             40             45

Ala Leu Glu Met Pro Glu Asp Gly Gln Ile Glu Phe Asp Asn Glu Arg
      50             55             60

Pro Leu Lys Ile Asp Phe Ser Lys Lys Pro Ser Lys His Asp Ile Leu
      65             70             75             80

Ala Leu Arg Arg Lys Ser Gly Met Val Phe Gln Gln Tyr Asn Leu Phe
      85             90             95

Pro His Lys Thr Ala Leu Glu Asn Val Met Glu Gly Pro Val Ala Val
      100            105            110

Gln Gly Lys Pro Ala Ala Gln Ala Arg Glu Glu Ala Leu Lys Leu Leu
      115            120            125

Glu Lys Val Gly Leu Gly Asp Lys Val Asp Leu Tyr Pro Tyr Gln Leu
      130            135            140

Ser Gly Gly Gln Gln Gln Arg Val Gly Ile Ala Arg Ala Leu Ala Ile
      145            150            155            160

Gln Pro Glu Leu Met Leu Phe Asp Glu Pro Thr Ser Ala Leu Asp Pro
      165            170            175

Glu Leu Val Gln Asp Val Leu Asn Ala Met Lys Glu Leu Ala Arg Glu
      180            185            190

Gly Trp Thr Met Val Val Val Thr His Glu Ile Lys Phe Ala Leu Glu

```

195	200	205
Val Ala Thr Thr Val Val Val Met Asp Gly Gly Val Ile Val Glu Gln		
210	215	220
Gly Ser Pro Lys Glu Leu Phe Asp His Pro Lys His Glu Arg Thr Arg		
225	230	235 240
Arg Phe Leu Ser Gln Ile Gln Ser Thr Lys Ile		
245	250	

<210> 457  
 <211> 1032  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 457  
 atgtcgggca atgcctcctc tccttcattc tccgcgcgcca tcgggctggt ttggttcggc 60  
 gcggcggtat cgattgccga aatcagcacg ggtacgctgc tcgccccctt gggctggcag 120  
 cgcggtctgg cgccctgct tttgggtcat gccgtcggcg gcgcgctggt ttttgccggc 180  
 gcgtatatcg gcgactgac cggacgcagc tcgatggaaa gtgtgcgcct gtcgttcggc 240  
 aaatgcggtt cagtgcgtgt ttccgtggcg aatatgctgc aactggccgg ctggacggcg 300  
 gtgatgattt acgtcggcgc aacggtcagc tccgctttgg gcaaagtgtt gtgggacggc 360  
 gaatcctttg tctggtgggc attggcaaac ggcgactga tcgtgctgtg gctggttttc 420  
 ggcgacgcga gaacggggcg gctgaaaacc gtttcgatgc tgctgatgct gcttgccgtg 480  
 ttgtggttga gcgtcgaagt gttcgtttcg tccggcacia acgcgcgcgc cgccgtttca 540  
 gacggcatga ccttcggaac ggcagtcgaa ctgtccgcgc tcatgccgct ttcttggtg 600  
 ccgctggccg ccgactacac gcgccaagca cgccgcccg ttgcggcaac cctgacggca 660  
 acgctcgcct atacgctgac gggctgctgg atgtatgcct tgggtttggc ggcggctctg 720  
 tttaccggag aaaccgacgt ggcgaaaatc ctgttgggcg cgggcttggg cataacgggc 780  
 attctggcag tcgtcctctc caccgttacc acaacgtttc tcgataccta ttccgccggc 840  
 gcgagtgcga acaacatttc cgcgcgtttt gcggaaatac ccgtcgtgtg cggcgttacc 900  
 ctgatccgca ccgtgcttgc cgtcatgctg cccgttaccg aatataaaaa cttcctgctg 960  
 cttatccgct cggtattttg gccgatggcg ggtggttttg attgccgact tttttgtctt 1020  
 aaaacggcgt ga 1032

<210> 458  
 <211> 1  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 458  
 Cys  
 1

<210> 459  
 <211> 1029  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 459  
 atgtcgggca atgcctcctc tccttcattc tcctccgcca tcgggctgat ttggttcggc 60  
 gcggcggtat cgattgccga aatcagcacg ggtacgctgc ttgcgccttt gggctggcag 120  
 cgcggtctgg cggtcttact tttgggtcat gccgtcggcg gcgcgctggt ttttgccggc 180

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gcgtatatcg gcgcactgac cggacgcagc tcgatggaaa gcgtgcgcct gtcgttcggc 240
aaacgcgggt cagtgcgtgt ttccgtggcg aatatgctgc aactggcccg ctggacggcg 300
gtgatgattt acgccggcgc aacggtcagc tccgctttgg gcaaagtgtt gtgggacggc 360
gaatcttttg tctggtgggc attggcaaac ggcgcgctga ttgtgctgtg gctggttttc 420
ggcgcacgca aaacaggcgg gctgaaaacc gtttcgatgc tgctgatgct gttggcgggt 480
ctgtggctga gtgccgaagt cttttccacg gcaggcagca ccgccgcaca ggtttcagac 540
ggcatgagtt tcggaacggc agtcgagctg tccgccgtga tgccgctttc ctggctgccg 600
cttgccgccg actacacgcg ccacgcgcgc cgcccgtttg cggcaaccct gacggcaacg 660
ctcgcctaca cgctgaccgg ctgctggatg tatgccttgg gtttggcagc ggcgttggtc 720
accggagaaa ccgacgtggc aaaaatcctg ctgggcgcar gtttgggtgc ggcaggcatt 780
ttggcggtcg tcctctccac cgttaccaca acgtttctcg atgcctattc cgccggcgcg 840
agtgcgaaca acatttccgc gcgttttgcg gaaacaccg tcgctgctrg cgttaccctg 900
atcggcacgg tacttgccgt catgctgccc gttaccgaat atgaaaactt cctgctgctt 960
atcggctcgg tatttgcgcc gatggcgggc ggttttgatt gccgactttt tcgtcttgaa 1020
acggcgtga                                     1029

```

<210> 460  
 <211> 342  
 <212> PRT  
 <213> *Neisseria meningitidis*

```

<400> 460
Met Ser Gly Asn Ala Ser Ser Pro Ser Ser Ser Ser Ala Ile Gly Leu
  1              5              10              15

Ile Trp Phe Gly Ala Ala Val Ser Ile Ala Glu Ile Ser Thr Gly Thr
      20              25              30

Leu Leu Ala. Pro Leu Gly Trp Gln Arg Gly Leu Ala Ala Leu Leu Leu
    35              40              45

Gly His Ala Val Gly Gly Ala Leu Phe Phe Ala Ala Ala Tyr Ile Gly
    50              55              60

Ala Leu Thr Gly Arg Ser Ser Met Glu Ser Val Arg Leu Ser Phe Gly
    65              70              75              80

Lys Arg Gly Ser Val Leu Phe Ser Val Ala Asn Met Leu Gln Leu Ala
      85              90              95

Gly Trp Thr Ala Val Met Ile Tyr Ala Gly Ala Thr Val Ser Ser Ala
    100              105              110

Leu Gly Lys Val Leu Trp Asp Gly Glu Ser Phe Val Trp Trp Ala Leu
    115              120              125

Ala Asn Gly Ala Leu Ile Val Leu Trp Leu Val Phe Gly Ala Arg Lys
    130              135              140

Thr Gly Gly Leu Lys Thr Val Ser Met Leu Leu Met Leu Leu Ala Val
    145              150              155              160

Leu Trp Leu Ser Ala Glu Val Phe Ser Thr Ala Gly Ser Thr Ala Ala
      165              170              175

```

Gln Val Ser Asp Gly Met Ser Phe Gly Thr Ala Val Glu Leu Ser Ala  
 180 185 190  
 Val Met Pro Leu Ser Trp Leu Pro Leu Ala Ala Asp Tyr Thr Arg His  
 195 200 205  
 Ala Arg Arg Pro Phe Ala Ala Thr Leu Thr Ala Thr Leu Ala Tyr Thr  
 210 215 220  
 Leu Thr Gly Cys Trp Met Tyr Ala Leu Gly Leu Ala Ala Ala Leu Phe  
 225 230 235 240  
 Thr Gly Glu Thr Asp Val Ala Lys Ile Leu Leu Gly Ala Xaa Leu Gly  
 245 250 255  
 Ala Ala Gly Ile Leu Ala Val Val Leu Ser Thr Val Thr Thr Thr Phe  
 260 265 270  
 Leu Asp Ala Tyr Ser Ala Gly Ala Ser Ala Asn Asn Ile Ser Ala Arg  
 275 280 285  
 Phe Ala Glu Thr Pro Val Ala Val Xaa Val Thr Leu Ile Gly Thr Val  
 290 295 300  
 Leu Ala Val Met Leu Pro Val Thr Glu Tyr Glu Asn Phe Leu Leu Leu  
 305 310 315 320  
 Ile Gly Ser Val Phe Ala Pro Met Ala Gly Gly Phe Asp Cys Arg Leu  
 325 330 335  
 Phe Arg Leu Glu Thr Ala  
 340

<210> 461  
 <211> 1028  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 461  
 atgtcgggca atgcctcctc tccttcatct tccgcgcgcca tcgggctgat ttggttcggc 60  
 gcggcgggtat cgattgccga aatcagcacg ggtacactgc ttgcgccttt gggctggcag 120  
 cgcgggtctgg cggctctgct tttgggtcat gccgctcggcg gcgcgctggt ttttgcggcg 180  
 gcgtatatcg gcgcactgac cggacgcagc tcgatggaaa gcgtgcgcct gtcgttcggc 240  
 aaacgcgggt cagtgtctgtt ttccgtggcg aatatgctgc aactggccgg ctggacggcg 300  
 gtgatgattt acgccggcgc aacggtcagc tccgcttttg gcaaagtgtt gtgggacggc 360  
 gaatcttttg tctggtgggc attggcaaac ggcgcgctga ttgtgctgtg gctggttttc 420  
 ggcgcacgca aaacaggcgg gctgaaaacc gtttcgatgc tgctgatgct gttggcgggt 480  
 ctgtggctga gtgccgaagt cttttccacg gcaggcagca ccgccgcaca ggtttcagac 540  
 ggcatgagtt tcggaacggc agtcgagctg tccgcgctga tgccgctttc ttggctgccg 600  
 ctggccgccc actacacgcg ccacgcgcgc cgcccgtttg cggcaaccct gacggcaacg 660  
 ctcgcctaca cgctgaccgg ctgctggatg tatgccttg gtttggcagc ggcgttgttc 720  
 accggagaaa ccgacgtggc aaaaatcctg ctgggcgcag gtttgggtgc ggcaggcatt 780  
 ttggcggtcg tctgtcgac cgttaccacc acttttctcg atgcctactc cgccggcgta 840  
 agtgccaaca atatttcgcg caaactttcg gaaataccca tcgccgttgc cgtcgccgtt 900  
 gtcggcacac tgcttgccgt cctcctgccc gttaccgaat atgaaaactt cctgctgctt 960  
 atcggctcgg tatttgcgcc gatggcggcg gttttgattg ccgacttttt cgtcttgaaa 1020



&lt;210&gt; 462

&lt;211&gt; 342

&lt;212&gt; PRT

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 462

Met Ser Gly Asn Ala Ser Ser Pro Ser Ser Ser Ala Ala Ile Gly Leu  
 1 5 10 15

Ile Trp Phe Gly Ala Ala Val Ser Ile Ala Glu Ile Ser Thr Gly Thr  
 20 25 30

Leu Leu Ala Pro Leu Gly Trp Gln Arg Gly Leu Ala Ala Leu Leu Leu  
 35 40 45

Gly His Ala Val Gly Gly Ala Leu Phe Phe Ala Ala Ala Tyr Ile Gly  
 50 55 60

Ala Leu Thr Gly Arg Ser Ser Met Glu Ser Val Arg Leu Ser Phe Gly  
 65 70 75 80

Lys Arg Gly Ser Val Leu Phe Ser Val Ala Asn Met Leu Gln Leu Ala  
 85 90 95

Gly Trp Thr Ala Val Met Ile Tyr Ala Gly Ala Thr Val Ser Ser Ala  
 100 105 110

Leu Gly Lys Val Leu Trp Asp Gly Glu Ser Phe Val Trp Trp Ala Leu  
 115 120 125

Ala Asn Gly Ala Leu Ile Val Leu Trp Leu Val Phe Gly Ala Arg Lys  
 130 135 140

Thr Gly Gly Leu Lys Thr Val Ser Met Leu Leu Met Leu Leu Ala Val  
 145 150 155 160

Leu Trp Leu Ser Ala Glu Val Phe Ser Thr Ala Gly Ser Thr Ala Ala  
 165 170 175

Gln Val Ser Asp Gly Met Ser Phe Gly Thr Ala Val Glu Leu Ser Ala  
 180 185 190

Val Met Pro Leu Ser Trp Leu Pro Leu Ala Ala Asp Tyr Thr Arg His  
 195 200 205

Ala Arg Arg Pro Phe Ala Ala Thr Leu Thr Ala Thr Leu Ala Tyr Thr  
 210 215 220

Leu Thr Gly Cys Trp Met Tyr Ala Leu Gly Leu Ala Ala Ala Leu Phe  
 225 230 235 240

Thr Gly Glu Thr Asp Val Ala Lys Ile Leu Leu Gly Ala Gly Leu Gly  
 245 250 255

Ala Ala Gly Ile Leu Ala Val Val Leu Ser Thr Val Thr Thr Thr Phe  
260 265 270

Leu Asp Ala Tyr Ser Ala Gly Val Ser Ala Asn Asn Ile Ser Ala Lys  
275 280 285

Leu Ser Glu Ile Pro Ile Ala Val Ala Val Ala Val Val Gly Thr Leu  
290 295 300

Leu Ala Val Leu Leu Pro Val Thr Glu Tyr Glu Asn Phe Leu Leu Leu  
305 310 315 320

Ile Gly Ser Val Phe Ala Pro Met Ala Xaa Gly Phe Asp Cys Arg Leu  
325 330 335

Phe Arg Leu Glu Thr Ala  
340

<210> 463  
<211> 867  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 463  
atgccgtctg aaacccccaaa ggcacgccgc cggttttcag acggcatcgc gtccgacaac 60  
cataccaaaag aatccatcat gctcaccctg tacggcgaaa ctttcccttc gcggctgctg 120  
ctcggcacgg cggcctaccc gaccctgaa atcctcaaac aatccgtccg aaccgcccgg 180  
cccgcgatga ttaccgtctc gctgcgccgc acgggatgcg gcggcgaggc gcacggtcag 240  
gggttttggg cgctgcttca agaaaccggc gttcccgtcc tgccgaacac ggcaggctgc 300  
caaagcgtgc aggaagcggg aacgacggcg caaatggcgc gcgaagtgtt tgaaaccgat 360  
tgataaaaat tggaactcat cggcgacgac gacaccttgc agccggacgt gttccaactc 420  
gtcgaagcgg cggaatcct gattaaagac ggcttcaaag tgctgcctta ttgcaccgaa 480  
gacctgattg cctgccgccg cctgctcgat gcgggctgtc aggcgttgat gccgtgggcg 540  
gctcccatcg gcacgggttt gggggcgggt caccgctatg cgctcaaaat cctgcgcgaa 600  
cgctgcccg acacgccgct gattatcgac gcgggcttgg gtttgccttc ccaagcggca 660  
caagtgatgg aatggggttt tgacggcgta ttgttaaaca ccgcggtttc ccgcagcggc 720  
gaccccgctc acatggcgcg cgcttcgca ctgcgcgtcg aatccggacg gctggcattt 780  
gaagccgggc cggtcgaagc gcgaacaaa gcccaagcca gcacgccgac agtcggacaa 840  
ccgttttggc attcggcgga atattga 867

<210> 464  
<211> 288  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 464  
Met Pro Ser Glu Thr Pro Lys Ala Arg Arg Arg Leu Ser Asp Gly Ile  
1 5 10 15

Ala Ser Asp Asn His Thr Lys Glu Ser Ile Met Leu Thr Leu Tyr Gly  
20 25 30

Glu Thr Phe Pro Ser Arg Leu Leu Leu Gly Thr Ala Ala Tyr Pro Thr  
35 40 45

Pro Glu Ile Leu Lys Gln Ser Val Arg Thr Ala Arg Pro Ala Met Ile  
 50 55 60  
 Thr Val Ser Leu Arg Arg Thr Gly Cys Gly Gly Glu Ala His Gly Gln  
 65 70 75 80  
 Gly Phe Trp Ser Leu Leu Gln Glu Thr Gly Val Pro Val Leu Pro Asn  
 85 90 95  
 Thr Ala Gly Cys Gln Ser Val Gln Glu Ala Val Thr Thr Ala Gln Met  
 100 105 110  
 Ala Arg Glu Val Phe Glu Thr Asp Trp Ile Lys Leu Glu Leu Ile Gly  
 115 120 125  
 Asp Asp Asp Thr Leu Gln Pro Asp Val Phe Gln Leu Val Glu Ala Ala  
 130 135 140  
 Glu Ile Leu Ile Lys Asp Gly Phe Lys Val Leu Pro Tyr Cys Thr Glu  
 145 150 155 160  
 Asp Leu Ile Ala Cys Arg Arg Leu Leu Asp Ala Gly Cys Gln Ala Leu  
 165 170 175  
 Met Pro Trp Ala Ala Pro Ile Gly Thr Gly Leu Gly Ala Val His Ala  
 180 185 190  
 Tyr Ala Leu Lys Ile Leu Arg Glu Arg Leu Pro Asp Thr Pro Leu Ile  
 195 200 205  
 Ile Asp Ala Gly Leu Gly Leu Pro Ser Gln Ala Ala Gln Val Met Glu  
 210 215 220  
 Trp Gly Phe Asp Gly Val Leu Leu Asn Thr Ala Val Ser Arg Ser Gly  
 225 230 235 240  
 Asp Pro Val Asn Met Ala Arg Ala Phe Ala Leu Ala Val Glu Ser Gly  
 245 250 255  
 Arg Leu Ala Phe Glu Ala Gly Pro Val Glu Ala Arg Thr Lys Ala Gln  
 260 265 270  
 Ala Ser Thr Pro Thr Val Gly Gln Pro Phe Trp His Ser Ala Glu Tyr  
 275 280 285

<210> 465  
 <211> 810  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 465  
 cactatacaa aggaacccat tatgctcacc ctatacggcg aaactttccc ctgcgaggctg 60  
 ctgctcggca cggctgcta cccgaccccc gaaatcctca aacaatccat ccaaaccgcc 120

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cagcctgcga tgattaccgt ctcgctgcgc cgcgcgggaa gcggcgggcga ggcgcacggt 180
caggggtttt ggtcgctgct tcaagaaacc ggcgttcccg tcctgccgaa cacggcaggc 240
tgccaaagcg tgcaggaagc ggtaacgacg gcgcaaattg cgcgcggaagt gtttgaaacc 300
gattggataa aattggaact catcgagat gacgacacct tgcagccgga tgtgttccag 360
cttgtcgaag cggcggaat cctgattaaa gacggcttca aagtgtgcc ttattgcacc 420
gaagacctga ttgcctgccg ccgcctgctc gacgcgggct gtcaggcggt gatgccgtgg 480
gcggccccga tcggcacggg tttgggcgcg gttcacgcct acgcgttgaa cgtcctgcgc 540
gaacgcctgc ccgacacgcc gctgattatc gacgcgggct tgggtttgcc ctcacaggcg 600
gcacaagtga tggaatgggg ctttgacggc gtgcttttga atactgccgt ttcccgcagc 660
ggcgatccgg tcaatatggc acgcgccttc gcactgcgcg tcgaatccgg acggctggca 720
tttgaagccg gaccggtcga agcacgcgac aaagcgcaag ccagcacgcc gacagtcgga 780
caaccgtttt ggcattcggc ggaatattga 810

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<210> 466

<211> 269

<212> PRT

<213> Neisseria meningitidis

<400> 466

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His Tyr Thr Lys Glu Pro Ile Met Leu Thr Leu Tyr Gly Glu Thr Phe
  1              5              10              15

Pro Ser Arg Leu Leu Leu Gly Thr Ala Ala Tyr Pro Thr Pro Glu Ile
          20              25              30

Leu Lys Gln Ser Ile Gln Thr Ala Gln Pro Ala Met Ile Thr Val Ser
          35              40              45

Leu Arg Arg Ala Gly Ser Gly Gly Glu Ala His Gly Gln Gly Phe Trp
          50              55              60

Ser Leu Leu Gln Glu Thr Gly Val Pro Val Leu Pro Asn Thr Ala Gly
          65              70              75              80

Cys Gln Ser Val Gln Glu Ala Val Thr Thr Ala Gln Met Ala Arg Glu
          85              90              95

Val Phe Glu Thr Asp Trp Ile Lys Leu Glu Leu Ile Gly Asp Asp Asp
          100              105              110

Thr Leu Gln Pro Asp Val Phe Gln Leu Val Glu Ala Ala Glu Ile Leu
          115              120              125

Ile Lys Asp Gly Phe Lys Val Leu Pro Tyr Cys Thr Glu Asp Leu Ile
          130              135              140

Ala Cys Arg Arg Leu Leu Asp Ala Gly Cys Gln Ala Leu Met Pro Trp
          145              150              155              160

Ala Ala Pro Ile Gly Thr Gly Leu Gly Ala Val His Ala Tyr Ala Leu
          165              170              175

Asn Val Leu Arg Glu Arg Leu Pro Asp Thr Pro Leu Ile Ile Asp Ala
          180              185              190

Gly Leu Gly Leu Pro Ser Gln Ala Ala Gln Val Met Glu Trp Gly Phe

```

195	200	205
Asp Gly Val Leu Leu Asn Thr Ala Val Ser Arg Ser Gly Asp Pro Val		
210	215	220
Asn Met Ala Arg Ala Phe Ala Leu Ala Val Glu Ser Gly Arg Leu Ala		
225	230	235 240
Phe Glu Ala Gly Pro Val Glu Ala Arg Asp Lys Ala Gln Ala Ser Thr		
	245	250 255
Pro Thr Val Gly Gln Pro Phe Trp His Ser Ala Glu Tyr		
	260	265

<210> 467  
 <211> 819  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 467

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ttgttaatcc actatacaaa ggaacccatt atgctcacc tgtacagcga aactttccct 60
tcgcggctgc tgctcggcac agcgcctac ccgaccctg aaatcctcaa acaatccgtc 120
cgaaccgccc ggcccgcgat gattaccgtc tcgctgcgcc gcgcgggatg cggcggcgag 180
gcgcacggtc aggggttttg gtcgctgctt caagaaaccg gcgttcccg cctgccgaac 240
acggcaggct gccaaagcgt gcaggaagcg gtaacgacgg cgcaaattgg gcgcgaagtg 300
tttgaaccg attggattaa actcgaactc atcggcgacg acgacacctt gcagccggat 360
gtgttccaac ttgtcgaagc ggcggaatc ctgattaaag acggcttcaa agtgctgcct 420
tattgcaccg aagacctgat tgccctgccg cgctgctcg acgcgggctg tcaggcggtt 480
atgccgtggg cgccccgat cggcacgggt ttgggcgcgg ttcacgccta cgcgttgaac 540
gtcctgcgcg aacgcctgcc cgacacgccg ctgattatcg acgcgggctt gggtttgccc 600
tcacaggcgg cacaagtgat ggaatggggc ttgacggcg tgcttttgaa tactgccgtt 660
tccgcagcgg gcgatccggg caatatggca cgcgccttcg cactcgccgt cgaatccgga 720
cggttgcat ttgaagccgg accggtcgaa gcacgcgaca aagcgcaagc cagcacgccg 780
acagtcggac aaccgttttg gcattcggcg gaatattga 819
  
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<210> 468  
 <211> 272  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 468

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Leu Leu Ile His Tyr Thr Lys Glu Pro Ile Met Leu Thr Leu Tyr Ser
  1              5              10              15

Glu Thr Phe Pro Ser Arg Leu Leu Leu Gly Thr Ala Ala Tyr Pro Thr
      20              25              30

Pro Glu Ile Leu Lys Gln Ser Val Arg Thr Ala Arg Pro Ala Met Ile
    35              40              45

Thr Val Ser Leu Arg Arg Ala Gly Cys Gly Gly Glu Ala His Gly Gln
    50              55              60

Gly Phe Trp Ser Leu Leu Gln Glu Thr Gly Val Pro Val Leu Pro Asn
    65              70              75              80
  
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Thr Ala Gly Cys Gln Ser Val Gln Glu Ala Val Thr Thr Ala Gln Met  
                             85                            90                            95  
 Ala Arg Glu Val Phe Glu Thr Asp Trp Ile Lys Leu Glu Leu Ile Gly  
                             100                            105                            110  
 Asp Asp Asp Thr Leu Gln Pro Asp Val Phe Gln Leu Val Glu Ala Ala  
                             115                            120                            125  
 Glu Ile Leu Ile Lys Asp Gly Phe Lys Val Leu Pro Tyr Cys Thr Glu  
                             130                            135                            140  
 Asp Leu Ile Ala Cys Arg Arg Leu Leu Asp Ala Gly Cys Gln Ala Leu  
                             145                            150                            155                            160  
 Met Pro Trp Ala Ala Pro Ile Gly Thr Gly Leu Gly Ala Val His Ala  
                             165                            170                            175  
 Tyr Ala Leu Asn Val Leu Arg Glu Arg Leu Pro Asp Thr Pro Leu Ile  
                             180                            185                            190  
 Ile Asp Ala Gly Leu Gly Leu Pro Ser Gln Ala Ala Gln Val Met Glu  
                             195                            200                            205  
 Trp Gly Phe Asp Gly Val Leu Leu Asn Thr Ala Val Ser Arg Ser Gly  
                             210                            215                            220  
 Asp Pro Val Asn Met Ala Arg Ala Phe Ala Leu Ala Val Glu Ser Gly  
                             225                            230                            235                            240  
 Arg Leu Ala Phe Glu Ala Gly Pro Val Glu Ala Arg Asp Lys Ala Gln  
                             245                            250                            255  
 Ala Ser Thr Pro Thr Val Gly Gln Pro Phe Trp His Ser Ala Glu Tyr  
                             260                            265                            270

<210> 469

<211> 789

<212> DNA

<213> Neisseria gonorrhoeae

<400> 469

atgctcacc tgtacggcga aactttccct tcgcggtctgc tgctcggcac ggccgcctac 60  
 ccgacccctg aaatcctcaa acaatccgtc cgaaccgccc ggcccgcgat gattaccgtc 120  
 tcgctgcgcc gcacgggatg cggcggcgag gcgcacggtc aggggttttg gtcgctgctt 180  
 caagaaaccg gcgttcccgt cctgccgaac acggcaggct gccaaagcgt gcaggaagcg 240  
 gtaacgacgg cgcaaattggc gcgcgaagtg tttgaaaccg attggataaa attggaactc 300  
 atcggcgacg acgacacctt gcagccggac gtgttccaac tcgtcgaagc ggcggaaatc 360  
 ctgattaaag acggcttcaa agtgctgcct tattgcaccg aagacctgat tgcctgccgc 420  
 cgctgctcg atcggggctg tcaggcggtg atgccgtggg cggctcccat cggcacgggt 480  
 ttggggggcg ttcaagccta tgcgctcaaa atcctgcgcg aacgcctgcc cgacacgccg 540  
 ctgattatcg acgcgggctt gggtttgcct tcccaagcgg cacaagtgat ggaatggggg 600

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tttgacggcg tattgttaaa caccgccgtt tcccgacagcg gcgaccccg t caacatggcg 660
cgcgcccttcg cactcgccgt cgaatccgga cggttgcat ttgaagccgg gccggtcgaa 720
gcgcgaacca aagcccaagc cagcagccg acagtcggac aaccgttttg gcattcggcg 780
gaatattga 789

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<210> 470
<211> 262
<212> PRT
<213> Neisseria gonorrhoeae

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<400> 470
Met Leu Thr Leu Tyr Gly Glu Thr Phe Pro Ser Arg Leu Leu Leu Gly
 1           5           10           15

Thr Ala Ala Tyr Pro Thr Pro Glu Ile Leu Lys Gln Ser Val Arg Thr
      20           25           30

Ala Arg Pro Ala Met Ile Thr Val Ser Leu Arg Arg Thr Gly Cys Gly
      35           40           45

Gly Glu Ala His Gly Gln Gly Phe Trp Ser Leu Leu Gln Glu Thr Gly
      50           55           60

Val Pro Val Leu Pro Asn Thr Ala Gly Cys Gln Ser Val Gln Glu Ala
      65           70           75           80

Val Thr Thr Ala Gln Met Ala Arg Glu Val Phe Glu Thr Asp Trp Ile
      85           90           95

Lys Leu Glu Leu Ile Gly Asp Asp Asp Thr Leu Gln Pro Asp Val Phe
      100          105          110

Gln Leu Val Glu Ala Ala Glu Ile Leu Ile Lys Asp Gly Phe Lys Val
      115          120          125

Leu Pro Tyr Cys Thr Glu Asp Leu Ile Ala Cys Arg Arg Leu Leu Asp
      130          135          140

Ala Gly Cys Gln Ala Leu Met Pro Trp Ala Ala Pro Ile Gly Thr Gly
      145          150          155          160

Leu Gly Ala Val His Ala Tyr Ala Leu Lys Ile Leu Arg Glu Arg Leu
      165          170          175

Pro Asp Thr Pro Leu Ile Ile Asp Ala Gly Leu Gly Leu Pro Ser Gln
      180          185          190

Ala Ala Gln Val Met Glu Trp Gly Phe Asp Gly Val Leu Leu Asn Thr
      195          200          205

Ala Val Ser Arg Ser Gly Asp Pro Val Asn Met Ala Arg Ala Phe Ala
      210          215          220

Leu Ala Val Glu Ser Gly Arg Leu Ala Phe Glu Ala Gly Pro Val Glu
      225          230          235          240

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Ala Arg Thr Lys Ala Gln Ala Ser Thr Pro Thr Val Gly Gln Pro Phe  
245 250 255

Trp His Ser Ala Glu Tyr  
260

<210> 471  
<211> 789  
<212> DNA  
<213> *Neisseria meningitidis*

<400> 471  
atgctcaccc tatacggcga aactttcccc tcgcggctgc tgctcggcac ggctgcctac 60  
ccgacccccg aaatcctcaa acaatccatc caaaccgccc agcctgcgat gattaccgtc 120  
tcgctgcgcc gcgcgggaag cggcggcgag gcgcacggtc aggggttttg gtcgctgctt 180  
caagaaaccg gcgttcccgt cctgccgaac acggcaggct gccaaagcgt gcaggaagcg 240  
gtaacgacgg cgcaaattggc gcgcgaagtg tttgaaaccg attggataaa attggaactc 300  
atcgagatg acgacacctt gcagccggat gtgttcacgc ttgtcgaagc ggcggaaaac 360  
ctgattaaag acggcttcaa agtgcctgcct tattgcaccg aagacctgat tgcctgccgc 420  
cgctgctcg acgcgggctg tcaggcgttg atgccgtggg cggccccgat cggcacgggt 480  
ttgggcgcgg ttacgccta cgcgttgaac gtcctgcgcg aacgcctgcc cgacacgccg 540  
ctgattatcg acgcgggctt gggtttgccc tcacaggcgg cacaagtgat ggaatggggc 600  
tttgacggcg tgcttttgaa tactgccgtt tccgcagcg gcgatccggt caatatggca 660  
cgcgcttcg cactcgccgt cgaatccgga cggtcggcat ttgaagccgg accggtcgaa 720  
gcacgcgaca aagcgcaagc cagcacgccg acagtcggac aaccgttttg gcattcggcg 780  
gaatattga 789

<210> 472  
<211> 262  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 472  
Met Leu Thr Leu Tyr Gly Glu Thr Phe Pro Ser Arg Leu Leu Leu Gly  
1 5 10 15  
Thr Ala Ala Tyr Pro Thr Pro Glu Ile Leu Lys Gln Ser Ile Gln Thr  
20 25 30  
Ala Gln Pro Ala Met Ile Thr Val Ser Leu Arg Arg Ala Gly Ser Gly  
35 40 45  
Gly Glu Ala His Gly Gln Gly Phe Trp Ser Leu Leu Gln Glu Thr Gly  
50 55 60  
Val Pro Val Leu Pro Asn Thr Ala Gly Cys Gln Ser Val Gln Glu Ala  
65 70 75 80  
Val Thr Thr Ala Gln Met Ala Arg Glu Val Phe Glu Thr Asp Trp Ile  
85 90 95  
Lys Leu Glu Leu Ile Gly Asp Asp Asp Thr Leu Gln Pro Asp Val Phe  
100 105 110



Gln Leu Val Glu Ala Ala Glu Ile Leu Ile Lys Asp Gly Phe Lys Val  
 115 120 125  
 Leu Pro Tyr Cys Thr Glu Asp Leu Ile Ala Cys Arg Arg Leu Leu Asp  
 130 135 140  
 Ala Gly Cys Gln Ala Leu Met Pro Trp Ala Ala Pro Ile Gly Thr Gly  
 145 150 155 160  
 Leu Gly Ala Val His Ala Tyr Ala Leu Asn Val Leu Arg Glu Arg Leu  
 165 170 175  
 Pro Asp Thr Pro Leu Ile Ile Asp Ala Gly Leu Gly Leu Pro Ser Gln  
 180 185 190  
 Ala Ala Gln Val Met Glu Trp Gly Phe Asp Gly Val Leu Leu Asn Thr  
 195 200 205  
 Ala Val Ser Arg Ser Gly Asp Pro Val Asn Met Ala Arg Ala Phe Ala  
 210 215 220  
 Leu Ala Val Glu Ser Gly Arg Leu Ala Phe Glu Ala Gly Pro Val Glu  
 225 230 235 240  
 Ala Arg Asp Lys Ala Gln Ala Ser Thr Pro Thr Val Gly Gln Pro Phe  
 245 250 255  
 Trp His Ser Ala Glu Tyr  
 260

<210> 473  
 <211> 789  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 473  
 atgctcacc tgtacagcga aactttccct tcgcggetgc tgctcggcac agccgcctac 60  
 ccgaccctg aaatcctcaa acaatccgtc cgaaccgccc ggcccgcgat gattaccgtc 120  
 tcgctgcgcc gcgcgggatg cgcgggcgag gcgcacggtc aggggttttg gtcgctgctt 180  
 caagaaaccg gcgttcccg tctgccgaac acggcaggct gccaaagcgt gcaggaagcg 240  
 gtaacgacgg cgcaaatggc gcgcgaagt tttgaaaccg attggattaa actcgaactc 300  
 atcggcgacg acgacacctt gcagccggat gtgttccaac ttgtcgaagc ggcggaatc 360  
 ctgattaaag acggcttcaa agtgctgcct tattgcaccg aagacctgat tgcctgccgc 420  
 cgcctgctcg acgcgggctg tcaggcggtg atgccgtggg cggccccgat cggcacgggt 480  
 ttgggcgcgg ttacgccta cgcgttgaaac gtctgcgcg aacgcctgcc cgacacgccg 540  
 ctgattatcg acgcgggctt gggtttgccc tcacaggcgg cacaagtgat ggaatggggc 600  
 tttgacggcg tgcttttgaa tactgccgtt tcccgcagcg gcgatccggt caatatggca 660  
 cgcgccctcg cactgcctgt cgaatccgga cggctggcat ttgaagccgg accggtcgaa 720  
 gcacgcgaca aagcgcaagc cagcacgccg acagtccgac aaccgttttg gcattcggcg 780  
 gaatattga 789

<210> 474  
 <211> 262  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 474

Met Leu Thr Leu Tyr Ser Glu Thr Phe Pro Ser Arg Leu Leu Leu Gly  
1 5 10 15

Thr Ala Ala Tyr Pro Thr Pro Glu Ile Leu Lys Gln Ser Val Arg Thr  
20 25 30

Ala Arg Pro Ala Met Ile Thr Val Ser Leu Arg Arg Ala Gly Cys Gly  
35 40 45

Gly Glu Ala His Gly Gln Gly Phe Trp Ser Leu Leu Gln Glu Thr Gly  
50 55 60

Val Pro Val Leu Pro Asn Thr Ala Gly Cys Gln Ser Val Gln Glu Ala  
65 70 75 80

Val Thr Thr Ala Gln Met Ala Arg Glu Val Phe Glu Thr Asp Trp Ile  
85 90 95

Lys Leu Glu Leu Ile Gly Asp Asp Asp Thr Leu Gln Pro Asp Val Phe  
100 105 110

Gln Leu Val Glu Ala Ala Glu Ile Leu Ile Lys Asp Gly Phe Lys Val  
115 120 125

Leu Pro Tyr Cys Thr Glu Asp Leu Ile Ala Cys Arg Arg Leu Leu Asp  
130 135 140

Ala Gly Cys Gln Ala Leu Met Pro Trp Ala Ala Pro Ile Gly Thr Gly  
145 150 155 160

Leu Gly Ala Val His Ala Tyr Ala Leu Asn Val Leu Arg Glu Arg Leu  
165 170 175

Pro Asp Thr Pro Leu Ile Ile Asp Ala Gly Leu Gly Leu Pro Ser Gln  
180 185 190

Ala Ala Gln Val Met Glu Trp Gly Phe Asp Gly Val Leu Leu Asn Thr  
195 200 205

Ala Val Ser Arg Ser Gly Asp Pro Val Asn Met Ala Arg Ala Phe Ala  
210 215 220

Leu Ala Val Glu Ser Gly Arg Leu Ala Phe Glu Ala Gly Pro Val Glu  
225 230 235 240

Ala Arg Asp Lys Ala Gln Ala Ser Thr Pro Thr Val Gly Gln Pro Phe  
245 250 255

Trp His Ser Ala Glu Tyr  
260

<210> 475

<211> 873

<212> DNA

<213> Neisseria gonorrhoeae

<400> 475

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atggaatat ggaatatgtt gaacacttgg cccgatgccg tcccgatacg cgcggaggcg 60
gccgaatccg tggcggcggg cgcggttttg ctgctggcgc gcgcccttct gttgaatata 120
cacttcagac ggcatccgga tticggcatc gaaagcaagc ggcggttttt ggttgccagc 180
cgcaatataa cgctgctttt ggtgctgttt tcgctggcat ttatctggtc ggcgcaaatt 240
caaacgctgg ctttgtcgat gtttgcggtg gcggcggcgg tcgtcgtggc gacaaaagaa 300
ctgattatgt gtctgtcggg cagtatttta aggtctgcca cccagcaata ctcggtcggc 360
gactatatcg aaatcaacgg cctgcgcggg cgcgtggtcg acatcaatct gttgaacacg 420
ctgatgatgc aggtcggtec gaaccccttg gtcggacagc ttgcgggaac caccgtttct 480
ttccccaaca gcctgttggt gagccacccc gtgcgcgcgc acaatatttt gggcgactat 540
gtcatccata cggtcgaaat ccccgttccc atccatttgg attcggatga agccgtatgc 600
cgtctgaaag ccgtactcga gcccttgtgc gcgccctaca tcccgcctat tcagcgggat 660
ttgaaaaacg tgcaggcgga aaaactgttt atcacgcccg ccgccaggcc gcgcgttacc 720
cgcgtaccgt acgacgacaa ggcataccgc atcatcgctc gcttcgcctc ccccgtttca 780
aagcggctgg aaatccaaca ggcggttatg gacgaatttt tgcgcgtaca ataccgcctg 840
ttaaatcatc ccgccggctc cgaaacactt taa 873
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<210> 476

<211> 290

<212> PRT

<213> Neisseria gonorrhoeae

<400> 476

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Met Glu Ile Trp Asn Met Leu Asn Thr Trp Pro Asp Ala Val Pro Ile
  1             5             10            15

Arg Ala Glu Ala Ala Glu Ser Val Ala Ala Val Ala Ala Leu Leu Leu
      20             25             30

Ala Arg Ala Leu Leu Leu Asn Ile His Phe Arg Arg His Pro Asp Phe
    35             40             45

Gly Ile Glu Ser Lys Arg Arg Phe Leu Val Ala Ser Arg Asn Ile Thr
    50             55             60

Leu Leu Leu Val Leu Phe Ser Leu Ala Phe Ile Trp Ser Ala Gln Ile
    65             70             75             80

Gln Thr Leu Ala Leu Ser Met Phe Ala Val Ala Ala Ala Val Val Val
      85             90             95

Ala Thr Lys Glu Leu Ile Met Cys Leu Ser Gly Ser Ile Leu Arg Ser
    100            105            110

Ala Thr Gln Gln Tyr Ser Val Gly Asp Tyr Ile Glu Ile Asn Gly Leu
    115            120            125

Arg Gly Arg Val Val Asp Ile Asn Leu Leu Asn Thr Leu Met Met Gln
    130            135            140

Val Gly Pro Asn Pro Leu Val Gly Gln Leu Ala Gly Thr Thr Val Ser
    145            150            155            160

Phe Pro Asn Ser Leu Leu Leu Ser His Pro Val Arg Arg Asp Asn Ile
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165	170	175
Leu Gly Asp Tyr Val Ile His Thr Val Glu Ile Pro Val Pro Ile His 180	185	190
Leu Asp Ser Asp Glu Ala Val Cys Arg Leu Lys Ala Val Leu Glu Pro 195	200	205
Leu Cys Ala Pro Tyr Ile Pro Ala Ile Gln Arg Tyr Leu Glu Asn Val 210	215	220
Gln Ala Glu Lys Leu Phe Ile Thr Pro Ala Ala Arg Pro Arg Val Thr 225	230	235
Arg Val Pro Tyr Asp Asp Lys Ala Tyr Arg Ile Ile Val Arg Phe Ala 245	250	255
Ser Pro Val Ser Lys Arg Leu Glu Ile Gln Gln Ala Val Met Asp Glu 260	265	270
Phe Leu Arg Val Gln Tyr Arg Leu Leu Asn His Pro Ala Gly Ser Glu 275	280	285
Thr Leu 290		

<210> 477  
 <211> 873  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 477  
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 gtcgaatccg tggcgggcgg tgcggctttg ctgctggcgc gcgcccttct gttgaatatc 120  
 cacttcaaac ggcacccgga ttctggcatc gaaagcaagc ggcgggtttt ggttgccagc 180  
 cgcaatataa cgctgctttt ggtgctgttt tcgctggcat ttatctggtc ggcgcaaadc 240  
 caaacgctgg ctttgctgat gtttgcggtg gcggcgggcg tcgtcgtggc gacgaaggaa 300  
 ctgattatgt gtctgtcggg cagtatttta aggtctgcca cccagcaata ctcggtcggc 360  
 gactatatcg aaatcaacgg cctgcgcggg cgcgtggctg acatcaacct gttgaacacg 420  
 ctgatgatgc aggtcgggtc gaaccccttg gtcggacagc ttgcggaac caccgtttct 480  
 ttccccaaac gcctgttggt gagccacccc gtgcgcgcgc acaatatattt gggcgactat 540  
 gtcacccata cggtcgaaat ccccggtccc atccatttgg attcgatga agccgtatgc 600  
 cgtctgaaag ccgtactcga gcccttgtgc gcgcctaca tccccgccat ccaacggsat 660  
 ttggaaaacg tgcaggcgga aaaactgttt atcacgccc cgcgcagacc gcgcgttacc 720  
 cgcgtgccgt acgatgacaa ggcataccgc atcatcgcc gcttcgcttc ccccgtttca 780  
 aagcggctgg aaatccaaca ggcggttatg gacgaatttt tgcgcgtaca ataccgcctg 840  
 ttaaataacc ccgcccgtc cgaaacactt taa 873

<210> 478  
 <211> 290  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 478  
 Met Glu Ile Trp Asn Met Leu Asp Thr Trp Leu Gly Ala Val Pro Ile

1	5	10	15
Arg Ala Glu	Ala Val Glu Ser Val	Ala Ala Val Ala Ala	Leu Leu Leu
	20	25	30
Ala Arg Ala	Leu Leu Leu Asn Ile His	Phe Lys Arg His	Pro Asp Phe
	35	40	45
Gly Ile Glu	Ser Lys Arg Arg Phe	Leu Val Ala Ser	Arg Asn Ile Thr
	50	55	60
Leu Leu Leu	Val Leu Phe Ser	Leu Ala Phe Ile	Trp Ser Ala Gln Ile
	65	70	75 80
Gln Thr Leu	Ala Leu Ser Met	Phe Ala Val Ala	Ala Val Val Val
	85	90	95
Ala Thr Lys	Glu Leu Ile Met	Cys Leu Ser Gly	Ser Ile Leu Arg Ser
	100	105	110
Ala Thr Gln	Gln Tyr Ser Val	Gly Asp Tyr Ile	Glu Ile Asn Gly Leu
	115	120	125
Arg Gly Arg	Val Val Asp Ile	Asn Leu Leu Asn	Thr Leu Met Met Gln
	130	135	140
Val Gly Pro	Asn Pro Leu Val	Gly Gln Leu Ala	Gly Thr Thr Val Ser
	145	150	155 160
Phe Pro Asn	Ser Leu Leu Leu	Ser His Pro Val	Arg Arg Asp Asn Ile
	165	170	175
Leu Gly Asp	Tyr Val Ile His	Thr Val Glu Ile	Pro Val Pro Ile His
	180	185	190
Leu Asp Ser	Asp Glu Ala Val	Cys Arg Leu Lys	Ala Val Leu Glu Pro
	195	200	205
Leu Cys Ala	Pro Tyr Ile Pro	Ala Ile Gln Arg	Xaa Leu Glu Asn Val
	210	215	220
Gln Ala Glu	Lys Leu Phe Ile	Thr Pro Ala Ala	Arg Pro Arg Val Thr
	225	230	235 240
Arg Val Pro	Tyr Asp Asp Lys	Ala Tyr Arg Ile	Ile Val Arg Phe Ala
	245	250	255
Ser Pro Val	Ser Lys Arg Leu	Glu Ile Gln Gln	Ala Val Met Asp Glu
	260	265	270
Phe Leu Arg	Val Gln Tyr Arg	Leu Leu Asn His	Pro Ala Gly Ser Glu
	275	280	285
Thr Leu			
290			

<210> 479  
<211> 873  
<212> DNA  
<213> Neisseria meningitidis

<400> 479  
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gtcgaatccg tggcgggtgg cgcggctttg ctgctggcgc gcgcccttct gttgaatata 120  
cacttcaaac ggcatccgga ttctcgcatc gaaagcaagc ggcggttttt ggttgccagc 180  
cgcaatataa cgctgctttt ggtgctggtt tcgctggcat ttatctggtc ggcgcaaata 240  
caaacgctgg ctttgtcgat gtttgcgggtg gcggcggcgg tcgtcgtggc gacgaaggaa 300  
ctgattatgt gtctgtcggg cagcatttta aggtctgcca cccagcaata ctcggtcggc 360  
gactatatcg aaatcaacgg cctgcgcggg cgcgtggctg acatcaacct gttgaacacg 420  
ctgatgatgc aggtcgggtcc gaaccccttg gtcggacagc ttgcgggaac caccgtttct 480  
ttccccaaca gcctgttggt gagccacccc gtgcgcgcgc acaatatttt gggcgactac 540  
gtcatccata cggtcgaaat cccggttccc atccatttgg attcggtatga agcgtatgc 600  
cgtctgaaaag ccgtactcga gcccttgtgc gcgccctaca tccccgccat ccaacggcat 660  
ttggaaaacg tgcaggcgga aaaactgttt atcacgcccg ccgccaaacc gcgcgttacc 720  
cgcgtgccgt acgatgacaa ggcataccgc atcatcgtcc gcttcgcctc ccccgtttca 780  
aagcggctgg aaatccaaca ggcggttatg gacgaatttt tgcgcgtaca ataccgcctg 840  
ttaaattacc ccgccggctc cgaaacactt taa 873

<210> 480  
<211> 290  
<212> PRT  
<213> Neisseria meningitidis

<400> 480  
Met Glu Ile Trp Asn Met Leu Asp Thr Trp Leu Gly Ala Val Pro Ile  
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Arg Ala Glu Ala Val Glu Ser Val Ala Val Val Ala Ala Leu Leu Leu  
20 25 30  
Ala Arg Ala Leu Leu Leu Asn Ile His Phe Lys Arg His Pro Asp Phe  
35 40 45  
Gly Ile Glu Ser Lys Arg Arg Phe Leu Val Ala Ser Arg Asn Ile Thr  
50 55 60  
Leu Leu Leu Val Leu Phe Ser Leu Ala Phe Ile Trp Ser Ala Gln Ile  
65 70 75 80  
Gln Thr Leu Ala Leu Ser Met Phe Ala Val Ala Ala Val Val Val  
85 90 95  
Ala Thr Lys Glu Leu Ile Met Cys Leu Ser Gly Ser Ile Leu Arg Ser  
100 105 110  
Ala Thr Gln Gln Tyr Ser Val Gly Asp Tyr Ile Glu Ile Asn Gly Leu  
115 120 125  
Arg Gly Arg Val Val Asp Ile Asn Leu Leu Asn Thr Leu Met Met Gln  
130 135 140  
Val Gly Pro Asn Pro Leu Val Gly Gln Leu Ala Gly Thr Thr Val Ser

145		150		155		160									
Phe	Pro	Asn	Ser	Leu	Leu	Ser	His	Pro	Val	Arg	Arg	Asp	Asn	Ile	
				165				170					175		
Leu	Gly	Asp	Tyr	Val	Ile	His	Thr	Val	Glu	Ile	Pro	Val	Pro	Ile	His
			180					185					190		
Leu	Asp	Ser	Asp	Glu	Ala	Val	Cys	Arg	Leu	Lys	Ala	Val	Leu	Glu	Pro
		195					200					205			
Leu	Cys	Ala	Pro	Tyr	Ile	Pro	Ala	Ile	Gln	Arg	His	Leu	Glu	Asn	Val
	210					215					220				
Gln	Ala	Glu	Lys	Leu	Phe	Ile	Thr	Pro	Ala	Ala	Lys	Pro	Arg	Val	Thr
225					230					235					240
Arg	Val	Pro	Tyr	Asp	Asp	Lys	Ala	Tyr	Arg	Ile	Ile	Val	Arg	Phe	Ala
			245					250						255	
Ser	Pro	Val	Ser	Lys	Arg	Leu	Glu	Ile	Gln	Gln	Ala	Val	Met	Asp	Glu
			260					265					270		
Phe	Leu	Arg	Val	Gln	Tyr	Arg	Leu	Leu	Asn	Tyr	Pro	Ala	Gly	Ser	Glu
		275					280					285			
Thr	Leu														
	290														

<210> 481  
 <211> 2037  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 481  
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 gtcaaagcgc aaacgcacac cggctgggcg aacaccgtcg agcgtctgac cggcatcacc 180  
 gaacgcgtcg gcaggatttg gggcgtcgtg tcccatctca actccgtcgt cgacacgccc 240  
 gaactgcgcg ccgtctataa cgaactgatg cctgaaatca ccgtcttctt caccgaaatc 300  
 ggacaagaca tcgaactgta caaccgcttc aaaaccatca aaaattcccc cgaatttgca 360  
 acgttttccc ccgcacaaaa aaccaagctc gatcacgacc tgcgcgattt cgtattgagc 420  
 ggcgcggaac tgccgcccga acggcaggca gaactggcaa aactgcaaac cgaaggcgcg 480  
 caactttccg ccaaattctc ccaaaacgtc ctagacgcga ccgacgcgtt cggcatttac 540  
 tttgacgatg ccgcaccgct tgccggcatt cccgaagacg cgctcgccat gtttgccgcc 600  
 gccgcgcaaa gcgaaggcaa aacagggttac aaaatcggct tgcagattcc gcactacctt 660  
 gccgttatcc aatacgccgg caaccgcgaa ctgcgcgaac aaatctaccg cgcctacggt 720  
 acccggtgcca gcgaactttc aaacgacggc aaattcgaca acaccgcaa catcgaccgc 780  
 acgctcgaaa acgcattgaa aaccgcaaaa ctgctcggtt taaaaatta cgccgaattg 840  
 tcgctggcaa ccaaaatggc ggacacgccc gaacagggtt taaacttcc tgcacgacctc 900  
 gccgcgcgcg ccaaacccta cgccgaaaaa gacctcgccg aagtcaaagc cttcgcccg 960  
 gaacacctcg gtctcgccga cccgcagccg tgggacttga gctacgccg cgaaaaactg 1020  
 cgcgaaagcca aatacgcatc cagcgaaacc gaagtcaaaa aatacttccc cgtcggcaaa 1080  
 gttctggcag gcctgttcgc ccaaatcaaa aaactctacg gcatcggtt cgcgaaaaaa 1140  
 accgttcccc tctggcacia agacgtgcgc tattttgaat tgcaacaaaa cggcaaaacc 1200  
 atcggcggcg tttatatgga tttgtacgca cgcgaaaggc aacgcggcgc cgcgtggatg 1260

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aacgactaca aaggccgccc ccgctttgcc gacggcacgc tgcaactgcc caccgcctac 1320
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atcctcaccc tcttcacaga aaccggccac ggactgcacc acctgcttac ccaagtggac 1440
gaactgggag tgtccggcat caacggcgta gaatgggacg cggtcgaact gccagccag 1500
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cgcggtatgt tctcgtccg gcaaattggag ttcgccctct tcgatatgat gatttacagt 1680
gaaagcgacg aatgccgtct gaaaaactgg cagcagggtt tagacagcgt gcgcaaagaa 1740
gtcgcggtca tccaaccgcc cgaatacaac cgcttcgcca acagcttcgg ccacatcttc 1800
gccggcggct attccgcagg ctattacagc tacgcatggg ccgaagtcct cagcaccgat 1860
gcctacgccg cttttgaaga aagcgacgac gtccgcccca caggcaaacg cttctggcaa 1920
gaaatccttg ccgtcggcgg ctcccgcagc gcggcggaat ccttcaaagc cttccgcgga 1980
cgcgaaccga gcatagacgc actgctgcgc caaagcggtt tcgacaacgc ggcttga . 2037

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<210> 482

<211> 678

<212> PRT

<213> Neisseria gonorrhoeae

<400> 482

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Met Ile Asp Asn Ala Leu Leu His Leu Gly Glu Glu Pro Arg Phe Asn
  1             5             10             15

Gln Ile Gln Thr Glu Asp Ile Lys Pro Ala Val Gln Thr Ala Ile Ala
      20             25             30

Glu Ala Arg Gly Gln Ile Ala Ala Val Lys Ala Gln Thr His Thr Gly
      35             40             45

Trp Ala Asn Thr Val Glu Arg Leu Thr Gly Ile Thr Glu Arg Val Gly
      50             55             60

Arg Ile Trp Gly Val Val Ser His Leu Asn Ser Val Val Asp Thr Pro
      65             70             75             80

Glu Leu Arg Ala Val Tyr Asn Glu Leu Met Pro Glu Ile Thr Val Phe
      85             90             95

Phe Thr Glu Ile Gly Gln Asp Ile Glu Leu Tyr Asn Arg Phe Lys Thr
      100            105            110

Ile Lys Asn Ser Pro Glu Phe Ala Thr Leu Ser Pro Ala Gln Lys Thr
      115            120            125

Lys Leu Asp His Asp Leu Arg Asp Phe Val Leu Ser Gly Ala Glu Leu
      130            135            140

Pro Pro Glu Arg Gln Ala Glu Leu Ala Lys Leu Gln Thr Glu Gly Ala
      145            150            155            160

Gln Leu Ser Ala Lys Phe Ser Gln Asn Val Leu Asp Ala Thr Asp Ala
      165            170            175

Phe Gly Ile Tyr Phe Asp Asp Ala Ala Pro Leu Ala Gly Ile Pro Glu
      180            185            190

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Asp Ala Leu Ala Met Phe Ala Ala Ala Ala Gln Ser Glu Gly Lys Thr  
 195 200 205  
 Gly Tyr Lys Ile Gly Leu Gln Ile Pro His Tyr Leu Ala Val Ile Gln  
 210 215 220  
 Tyr Ala Gly Asn Arg Glu Leu Arg Glu Gln Ile Tyr Arg Ala Tyr Val  
 225 230 235 240  
 Thr Arg Ala Ser Glu Leu Ser Asn Asp Gly Lys Phe Asp Asn Thr Ala  
 245 250 255  
 Asn Ile Asp Arg Thr Leu Glu Asn Ala Leu Lys Thr Ala Lys Leu Leu  
 260 265 270  
 Gly Phe Lys Asn Tyr Ala Glu Leu Ser Leu Ala Thr Lys Met Ala Asp  
 275 280 285  
 Thr Pro Glu Gln Val Leu Asn Phe Leu His Asp Leu Ala Arg Arg Ala  
 290 295 300  
 Lys Pro Tyr Ala Glu Lys Asp Leu Ala Glu Val Lys Ala Phe Ala Arg  
 305 310 315 320  
 Glu His Leu Gly Leu Ala Asp Pro Gln Pro Trp Asp Leu Ser Tyr Ala  
 325 330 335  
 Gly Glu Lys Leu Arg Glu Ala Lys Tyr Ala Phe Ser Glu Thr Glu Val  
 340 345 350  
 Lys Lys Tyr Phe Pro Val Gly Lys Val Leu Ala Gly Leu Phe Ala Gln  
 355 360 365  
 Ile Lys Lys Leu Tyr Gly Ile Gly Phe Ala Glu Lys Thr Val Pro Val  
 370 375 380  
 Trp His Lys Asp Val Arg Tyr Phe Glu Leu Gln Gln Asn Gly Lys Thr  
 385 390 395 400  
 Ile Gly Gly Val Tyr Met Asp Leu Tyr Ala Arg Glu Gly Lys Arg Gly  
 405 410 415  
 Gly Ala Trp Met Asn Asp Tyr Lys Gly Arg Arg Arg Phe Ala Asp Gly  
 420 425 430  
 Thr Leu Gln Leu Pro Thr Ala Tyr Leu Val Cys Asn Phe Ala Pro Pro  
 435 440 445  
 Val Gly Gly Lys Glu Ala Arg Leu Ser His Asp Glu Ile Leu Thr Leu  
 450 455 460  
 Phe His Glu Thr Gly His Gly Leu His His Leu Leu Thr Gln Val Asp  
 465 470 475 480  
 Glu Leu Gly Val Ser Gly Ile Asn Gly Val Glu Trp Asp Ala Val Glu  
 485 490 495

Leu Pro Ser Gln Phe Met Glu Asn Phe Val Trp Glu Tyr Asn Val Leu  
 500 505 510  
 Ala Gln Met Ser Ala His Glu Glu Thr Gly Glu Pro Leu Pro Lys Glu  
 515 520 525  
 Leu Phe Asp Lys Met Leu Ala Ala Lys Asn Phe Gln Arg Gly Met Phe  
 530 535 540  
 Leu Val Arg Gln Met Glu Phe Ala Leu Phe Asp Met Met Ile Tyr Ser  
 545 550 555 560  
 Glu Ser Asp Glu Cys Arg Leu Lys Asn Trp Gln Gln Val Leu Asp Ser  
 565 570 575  
 Val Arg Lys Glu Val Ala Val Ile Gln Pro Pro Glu Tyr Asn Arg Phe  
 580 585 590  
 Ala Asn Ser Phe Gly His Ile Phe Ala Gly Gly Tyr Ser Ala Gly Tyr  
 595 600 605  
 Tyr Ser Tyr Ala Trp Ala Glu Val Leu Ser Thr Asp Ala Tyr Ala Ala  
 610 615 620  
 Phe Glu Glu Ser Asp Asp Val Ala Ala Thr Gly Lys Arg Phe Trp Gln  
 625 630 635 640  
 Glu Ile Leu Ala Val Gly Gly Ser Arg Ser Ala Ala Glu Ser Phe Lys  
 645 650 655  
 Ala Phe Arg Gly Arg Glu Pro Ser Ile Asp Ala Leu Leu Arg Gln Ser  
 660 665 670  
 Gly Phe Asp Asn Ala Ala  
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<210> 483

<211> 1431

<212> DNA

<213> Neisseria meningitidis

<400> 483

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 atcaaagccc aaacgcacac cggctgggca aacactgtcg aacccttgac cggcatcacc 180  
 gaacgcgtcg gcaggatttg gggcgtggtg tcgcacctca actgcgtcgc cgacacgccc 240  
 gaactgcgcg ccgtctataa cgaactgatg cccgaaatca ccgtcttctt caccgaaatc 300  
 ggacaagaca tcgagctgta caaccgcttc aaaaccatca aaaattcccc cgaattcgac 360  
 accctctccc ccgcacaaaa aaccaaactc aaccactacg ccagcgaaaa actgcgcgaa 420  
 gccaaatacg cgttcagcga aaccgawgtc aaaaaatayt tcccygtcgg caawgtatta 480  
 aacggactgt tcgccaamt caaaaaactm tacggcatcg gatttaccga aaaaacygtc 540  
 cccgtctggc acaaagacgt gcgctattkt gaattgcaac aaaacggcga amccataggc 600  
 ggcgtttata tggatttgta cgcacgcgaa ggcaaacgcg gcggcgcggtg gatgaacgac 660  
 tacaaaggcc gccgcggttt ttcagacggc acgctgcaay tgcccaccgc ctacctcgtc 720  
 tgcaacttcg cccacccgt cggcggcgagg gaagcccgcy tgagccacga cgaaatcctc 780

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gaaaatttcg tttgggaata caatgtcttg gcacaamtgt cagcccacga agaaaccggc 960
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ctcgccgtcg ggnatcgcg cagcgngca gaatccttca aagccttccg cggccgcgaa 1380
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<210> 484

<211> 476

<212> PRT

<213> Neisseria meningitidis

<400> 484

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Met Thr Asp Asn Ala Leu Leu His Leu Gly Glu Glu Pro Arg Phe Asp
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Gln Ile Lys Thr Glu Asp Ile Lys Pro Ala Leu Gln Thr Ala Ile Ala
      20             25             30

Glu Ala Arg Glu Gln Ile Ala Ala Ile Lys Ala Gln Thr His Thr Gly
      35             40             45

Trp Ala Asn Thr Val Glu Pro Leu Thr Gly Ile Thr Glu Arg Val Gly
      50             55             60

Arg Ile Trp Gly Val Val Ser His Leu Asn Cys Val Ala Asp Thr Pro
      65             70             75             80

Glu Leu Arg Ala Val Tyr Asn Glu Leu Met Pro Glu Ile Thr Val Phe
      85             90             95

Phe Thr Glu Ile Gly Gln Asp Ile Glu Leu Tyr Asn Arg Phe Lys Thr
      100            105            110

Ile Lys Asn Ser Pro Glu Phe Asp Thr Leu Ser Pro Ala Gln Lys Thr
      115            120            125

Lys Leu Asn His Tyr Ala Ser Glu Lys Leu Arg Glu Ala Lys Tyr Ala
      130            135            140

Phe Ser Glu Thr Xaa Val Lys Lys Tyr Phe Pro Val Gly Xaa Val Leu
      145            150            155            160

Asn Gly Leu Phe Ala Gln Xaa Lys Lys Leu Tyr Gly Ile Gly Phe Thr
      165            170            175

Glu Lys Thr Val Pro Val Trp His Lys Asp Val Arg Tyr Xaa Glu Leu
      180            185            190

Gln Gln Asn Gly Glu Xaa Ile Gly Gly Val Tyr Met Asp Leu Tyr Ala

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195					200					205					
Arg	Glu	Gly	Lys	Arg	Gly	Gly	Ala	Trp	Met	Asn	Asp	Tyr	Lys	Gly	Arg
210					215					220					
Arg	Arg	Phe	Ser	Asp	Gly	Thr	Leu	Gln	Leu	Pro	Thr	Ala	Tyr	Leu	Val
225					230					235					240
Cys	Asn	Phe	Ala	Pro	Pro	Val	Gly	Gly	Arg	Glu	Ala	Arg	Leu	Ser	His
				245					250					255	
Asp	Glu	Ile	Leu	Ile	Leu	Phe	His	Glu	Thr	Gly	His	Gly	Leu	His	His
			260					265					270		
Leu	Leu	Thr	Gln	Val	Asp	Glu	Leu	Gly	Val	Ser	Gly	Ile	Asn	Gly	Val
			275				280						285		
Xaa	Trp	Asp	Ala	Val	Glu	Leu	Pro	Ser	Gln	Phe	Met	Glu	Asn	Phe	Val
	290					295					300				
Trp	Glu	Tyr	Asn	Val	Leu	Ala	Gln	Xaa	Ser	Ala	His	Glu	Glu	Thr	Gly
305					310					315					320
Val	Pro	Leu	Pro	Lys	Glu	Leu	Xaa	Asp	Lys	Xaa	Leu	Ala	Ala	Lys	Asn
				325					330					335	
Phe	Gln	Xaa	Gly	Met	Phe	Xaa	Val	Arg	Gln	Xaa	Glu	Phe	Ala	Leu	Phe
			340					345					350		
Asp	Met	Met	Ile	Tyr	Ser	Glu	Asp	Asp	Glu	Gly	Arg	Leu	Lys	Asn	Trp
		355					360					365			
Gln	Gln	Val	Leu	Asp	Ser	Val	Arg	Lys	Lys	Val	Ala	Val	Ile	Gln	Pro
		370					375					380			
Pro	Glu	Tyr	Asn	Arg	Phe	Ala	Leu	Ser	Phe	Gly	His	Ile	Phe	Ala	Gly
385						390					395				400
Gly	Tyr	Ser	Ala	Ala	Xaa	Tyr	Ser	Tyr	Ala	Trp	Ala	Glu	Val	Leu	Ser
				405					410					415	
Ala	Asp	Ala	Tyr	Ala	Ala	Phe	Glu	Glu	Ser	Asp	Asp	Val	Ala	Ala	Thr
			420					425					430		
Gly	Lys	Arg	Phe	Trp	Gln	Glu	Ile	Leu	Ala	Val	Gly	Xaa	Ser	Arg	Ser
		435					440					445			
Gly	Ala	Glu	Ser	Phe	Lys	Ala	Phe	Arg	Gly	Arg	Glu	Pro	Ser	Ile	Asp
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<210> 485  
 <211> 2037  
 <212> DNA

<213> Neisseria meningitidis

<400> 485

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gaacgcgtcg gcaggatttg gggcgtggtg tcgcacctca actccgtcac cgacacgccc 240
gaactgcgcg ccgcctacaa tgaattaatg cccgaaatta ccgtcttctt caccgaaatc 300
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accctctccc acgcgcaaaa aaccaaactc aaccacgata tgcgcgattt cgtcctcagc 420
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gccgtcatcc aatacgccga caaccgcaaa ctgcgcgaac aaatctaccg cgcctacgtt 720
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aacgactaca aaggccgcgg ccgtttttca gacggcacgc tgcaactgcc caccgcctac 1320
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<210> 486

<211> 678

<212> PRT

<213> Neisseria meningitidis

<400> 486

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Glu Ala Arg Glu Gln Ile Ala Ala Ile Lys Ala Gln Thr His Thr Gly
 35             40             45

Trp Ala Asn Thr Val Glu Pro Leu Thr Gly Ile Thr Glu Arg Val Gly
 50             55             60
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Arg	Ile	Trp	Gly	Val	Val	Ser	His	Leu	Asn	Ser	Val	Thr	Asp	Thr	Pro	65	70	75	80
Glu	Leu	Arg	Ala	Ala	Tyr	Asn	Glu	Leu	Met	Pro	Glu	Ile	Thr	Val	Phe	85	90	95	
Phe	Thr	Glu	Ile	Gly	Gln	Asp	Ile	Glu	Leu	Tyr	Asn	Arg	Phe	Lys	Thr	100	105	110	
Ile	Lys	Asn	Ser	Pro	Glu	Phe	Asp	Thr	Leu	Ser	His	Ala	Gln	Lys	Thr	115	120	125	
Lys	Leu	Asn	His	Asp	Leu	Arg	Asp	Phe	Val	Leu	Ser	Gly	Ala	Glu	Leu	130	135	140	
Pro	Pro	Glu	Gln	Gln	Ala	Glu	Leu	Ala	Lys	Leu	Gln	Thr	Glu	Gly	Ala	145	150	155	160
Gln	Leu	Ser	Ala	Lys	Phe	Ser	Gln	Asn	Val	Leu	Asp	Ala	Thr	Asp	Ala	165	170	175	
Phe	Gly	Ile	Tyr	Phe	Asp	Asp	Ala	Ala	Pro	Leu	Ala	Gly	Ile	Pro	Glu	180	185	190	
Asp	Ala	Leu	Ala	Met	Phe	Ala	Ala	Ala	Ala	Gln	Ser	Glu	Gly	Lys	Thr	195	200	205	
Gly	Tyr	Lys	Ile	Gly	Leu	Gln	Ile	Pro	His	Tyr	Leu	Ala	Val	Ile	Gln	210	215	220	
Tyr	Ala	Asp	Asn	Arg	Lys	Leu	Arg	Glu	Gln	Ile	Tyr	Arg	Ala	Tyr	Val	225	230	235	240
Thr	Arg	Ala	Ser	Glu	Leu	Ser	Asp	Asp	Gly	Lys	Phe	Asp	Asn	Thr	Ala	245	250	255	
Asn	Ile	Asp	Arg	Thr	Leu	Glu	Asn	Ala	Leu	Gln	Thr	Ala	Lys	Leu	Leu	260	265	270	
Gly	Phe	Lys	Asn	Tyr	Ala	Glu	Leu	Ser	Leu	Ala	Thr	Lys	Met	Ala	Asp	275	280	285	
Thr	Pro	Glu	Gln	Val	Leu	Asn	Phe	Leu	His	Asp	Leu	Ala	Arg	Arg	Ala	290	295	300	
Lys	Pro	Tyr	Ala	Glu	Lys	Asp	Leu	Ala	Glu	Val	Lys	Ala	Phe	Ala	Arg	305	310	315	320
Glu	Ser	Leu	Gly	Leu	Ala	Asp	Leu	Gln	Pro	Trp	Asp	Leu	Gly	Tyr	Ala	325	330	335	
Gly	Glu	Lys	Leu	Arg	Glu	Ala	Lys	Tyr	Ala	Phe	Ser	Glu	Thr	Glu	Val	340	345	350	
Lys	Lys	Tyr	Phe	Pro	Val	Gly	Lys	Val	Leu	Asn	Gly	Leu	Phe	Ala	Gln	355	360	365	

Ile Lys Lys Leu Tyr Gly Ile Gly Phe Thr Glu Lys Thr Val Pro Val  
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 Trp His Lys Asp Val Arg Tyr Phe Glu Leu Gln Gln Asn Gly Glu Thr  
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 Ile Gly Gly Val Tyr Met Asp Leu Tyr Ala Arg Glu Gly Lys Arg Gly  
 405 410 415  
 Gly Ala Trp Met Asn Asp Tyr Lys Gly Arg Arg Arg Phe Ser Asp Gly  
 420 425 430  
 Thr Leu Gln Leu Pro Thr Ala Tyr Leu Val Cys Asn Phe Thr Pro Pro  
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 Val Gly Gly Lys Glu Ala Arg Leu Ser His Asp Glu Ile Leu Thr Leu  
 450 455 460  
 Phe His Glu Thr Gly His Gly Leu His His Leu Leu Thr Gln Val Asp  
 465 470 475 480  
 Glu Leu Gly Val Ser Gly Ile Asn Gly Val Glu Trp Asp Ala Val Glu  
 485 490 495  
 Leu Pro Ser Gln Phe Met Glu Asn Phe Val Trp Glu Tyr Asn Val Leu  
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 Ala Gln Met Ser Ala His Glu Glu Thr Gly Val Pro Leu Pro Lys Glu  
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 530 535 540  
 Leu Val Arg Gln Met Glu Phe Ala Leu Phe Asp Met Met Ile Tyr Ser  
 545 550 555 560  
 Glu Asp Asp Glu Gly Arg Leu Lys Asn Trp Gln Gln Val Leu Asp Ser  
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 Val Arg Lys Glu Val Ala Val Val Arg Pro Pro Glu Tyr Asn Arg Phe  
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 595 600 605  
 Tyr Ser Tyr Ala Trp Ala Glu Val Leu Ser Ala Asp Ala Tyr Ala Ala  
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 625 630 635 640  
 Glu Ile Leu Ala Val Gly Gly Ser Arg Ser Ala Ala Glu Ser Phe Lys  
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<210> 487  
<211> 1473  
<212> DNA  
<213> *Neisseria gonorrhoeae*

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gaacgcgtcg gcaggatttg gggcgctcgtg tcccatctca actccgtcgt cgacacgccc 240  
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<210> 488  
<211> 491  
<212> PRT  
<213> *Neisseria gonorrhoeae*

<400> 488  
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Glu Ala Arg Gly Gln Ile Ala Ala Val Lys Ala Gln Thr His Thr Gly  
35 40 45  
Trp Ala Asn Thr Val Glu Arg Leu Thr Gly Ile Thr Glu Arg Val Gly  
50 55 60  
Arg Ile Trp Gly Val Val Ser His Leu Asn Ser Val Val Asp Thr Pro  
65 70 75 80



Glu	Leu	Arg	Ala	Val	Tyr	Asn	Glu	Leu	Met	Pro	Glu	Ile	Thr	Val	Phe	
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Phe	Thr	Glu	Ile	Gly	Gln	Asp	Ile	Glu	Leu	Tyr	Asn	Arg	Phe	Lys	Thr	
				100					105					110		
Ile	Lys	Asn	Ser	Pro	Glu	Phe	Ala	Thr	Leu	Ser	Pro	Ala	Gln	Lys	Thr	
				115					120					125		
Lys	Leu	Asp	His	Asp	Leu	Arg	Asp	Phe	Val	Leu	Ser	Gly	Ala	Glu	Leu	
				130					135					140		
Pro	Pro	Glu	Arg	Gln	Ala	Glu	Leu	Ala	Lys	Leu	Gln	Thr	Glu	Gly	Ala	
				145					150					155		
Gln	Leu	Ser	Ala	Lys	Phe	Ser	Gln	Asn	Val	Leu	Asp	Ala	Thr	Asp	Ala	
				165					170					175		
Phe	Gly	Ile	Tyr	Phe	Asp	Asp	Ala	Ala	Pro	Leu	Ala	Gly	Ile	Pro	Glu	
				180					185					190		
Asp	Ala	Leu	Ala	Met	Phe	Ala	Ala	Ala	Ala	Gln	Ser	Glu	Gly	Lys	Thr	
				195					200					205		
Gly	Tyr	Lys	Ile	Gly	Leu	Gln	Ile	Pro	His	Tyr	Leu	Ala	Val	Ile	Gln	
				210					215					220		
Tyr	Ala	Gly	Asn	Arg	Glu	Leu	Arg	Glu	Gln	Ile	Tyr	Arg	Ala	Tyr	Val	
				225					230					235		
Thr	Arg	Ala	Ser	Glu	Leu	Ser	Asn	Asp	Gly	Lys	Phe	Asp	Asn	Thr	Ala	
				245					250					255		
Asn	Ile	Asp	Arg	Thr	Leu	Glu	Asn	Ala	Leu	Lys	Thr	Ala	Lys	Leu	Leu	
				260					265					270		
Gly	Phe	Lys	Asn	Tyr	Ala	Glu	Leu	Ser	Leu	Ala	Thr	Lys	Met	Ala	Asp	
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Thr	Pro	Glu	Gln	Val	Leu	Asn	Phe	Leu	His	Asp	Leu	Ala	Arg	Arg	Ala	
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Lys	Pro	Tyr	Ala	Glu	Lys	Asp	Leu	Ala	Glu	Val	Lys	Ala	Phe	Ala	Arg	
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Glu	His	Leu	Gly	Leu	Ala	Asp	Pro	Gln	Pro	Trp	Asp	Leu	Ser	Tyr	Ala	
				325					330					335		
Gly	Glu	Lys	Leu	Arg	Glu	Ala	Lys	Tyr	Ala	Phe	Ser	Glu	Thr	Glu	Val	
				340					345					350		
Lys	Lys	Tyr	Phe	Pro	Val	Gly	Lys	Val	Leu	Ala	Gly	Leu	Phe	Ala	Gln	
				355					360					365		
Ile	Lys	Lys	Leu	Tyr	Gly	Ile	Gly	Phe	Ala	Glu	Lys	Thr	Val	Pro	Val	
				370					375					380		

Trp His Lys Asp Val Arg Tyr Phe Glu Leu Gln Gln Asn Gly Lys Thr  
385 390 395 400

Ile Gly Gly Val Tyr Met Asp Leu Tyr Ala Arg Glu Gly Lys Arg Gly  
405 410 415

Gly Ala Trp Met Asn Asp Tyr Lys Gly Arg Arg Arg Phe Ala Asp Gly  
420 425 430

Thr Leu Gln Leu Pro Thr Ala Tyr Leu Val Cys Asn Phe Ala Pro Pro  
435 440 445

Val Gly Gly Lys Glu Ala Arg Leu Ser His Asp Glu Ile Leu Thr Leu  
450 455 460

Phe His Glu Thr Gly His Gly Leu His His Leu Leu Thr Gln Val Asp  
465 470 475 480

Glu Leu Gly Val Ser Gly Ile Asn Gly Val Lys  
485 490

<210> 489

<211> 2037

<212> DNA

<213> *Neisseria meningitidis*

<400> 489

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<210> 490

<211> 678

<212> PRT

<213> *Neisseria meningitidis*

<400> 490

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Gln	Ile	Lys	Thr	Glu	Asp	Ile	Lys	Pro	Ala	Leu	Gln	Thr	Ala	Ile	Ala
			20					25					30		
Glu	Ala	Arg	Glu	Gln	Ile	Ala	Ala	Ile	Lys	Ala	Gln	Thr	His	Thr	Gly
	35					40					45				
Trp	Ala	Asn	Thr	Val	Glu	Pro	Leu	Thr	Gly	Ile	Thr	Glu	Arg	Val	Gly
	50					55					60				
Arg	Ile	Trp	Gly	Val	Val	Ser	His	Leu	Asn	Ser	Val	Ala	Asp	Thr	Pro
	65				70					75					80
Glu	Leu	Arg	Ala	Val	Tyr	Asn	Glu	Leu	Met	Pro	Glu	Ile	Thr	Val	Phe
				85					90						95
Phe	Thr	Glu	Ile	Gly	Gln	Asp	Ile	Glu	Leu	Tyr	Asn	Arg	Phe	Lys	Thr
		100						105					110		
Ile	Lys	Asn	Ser	Pro	Glu	Phe	Asp	Thr	Leu	Ser	Pro	Ala	Gln	Lys	Thr
		115					120					125			
Lys	Leu	Asn	His	Asp	Leu	Arg	Asp	Phe	Val	Leu	Ser	Gly	Ala	Glu	Leu
	130					135					140				
Pro	Pro	Glu	Gln	Gln	Ala	Glu	Leu	Ala	Lys	Leu	Gln	Thr	Glu	Gly	Ala
145					150					155					160
Gln	Leu	Ser	Ala	Lys	Phe	Ser	Gln	Asn	Val	Leu	Asp	Ala	Thr	Asp	Ala
				165					170					175	
Phe	Gly	Ile	Tyr	Phe	Asp	Asp	Ala	Ala	Pro	Leu	Ala	Gly	Ile	Pro	Glu
		180						185					190		
Asp	Ala	Leu	Ala	Met	Phe	Ala	Ala	Ala	Gln	Ser	Glu	Ser	Lys	Thr	
	195						200				205				
Gly	Tyr	Lys	Ile	Gly	Leu	Gln	Ile	Pro	His	Tyr	Leu	Ala	Val	Ile	Gln
	210					215					220				
Tyr	Ala	Asp	Asn	Arg	Glu	Leu	Arg	Glu	Gln	Ile	Tyr	Arg	Ala	Tyr	Val

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Thr Arg Ala Ser Glu Leu Ser Asp Asp Gly Lys Phe Asp Asn Thr Ala						
		245		250		255
Asn Ile Asp Arg Thr Leu Ala Asn Ala Leu Gln Thr Ala Lys Leu Leu						
		260		265		270
Gly Phe Lys Asn Tyr Ala Glu Leu Ser Leu Ala Thr Lys Met Ala Asp						
		275		280		285
Thr Pro Glu Gln Val Leu Asn Phe Leu His Asp Leu Ala Arg Arg Ala						
		290		295		300
Lys Pro Tyr Ala Glu Lys Asp Leu Ala Glu Val Lys Ala Phe Ala Arg						
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Glu Ser Leu Asn Leu Ala Asp Leu Gln Pro Trp Asp Leu Gly Tyr Ala						
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Ser Glu Lys Leu Arg Glu Ala Lys Tyr Ala Phe Ser Glu Thr Glu Val						
		340		345		350
Lys Lys Tyr Phe Pro Val Gly Lys Val Leu Asn Gly Leu Phe Ala Gln						
		355		360		365
Ile Lys Lys Leu Tyr Gly Ile Gly Phe Thr Glu Lys Thr Val Pro Val						
		370		375		380
Trp His Lys Asp Val Arg Tyr Phe Glu Leu Gln Gln Asn Gly Glu Thr						
385		390		395		400
Ile Gly Gly Val Tyr Met Asp Leu Tyr Ala Arg Glu Gly Lys Arg Gly						
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Gly Ala Trp Met Asn Asp Tyr Lys Gly Arg Arg Arg Phe Ser Asp Gly						
		420		425		430
Thr Leu Gln Leu Pro Thr Ala Tyr Leu Val Cys Asn Phe Ala Pro Pro						
		435		440		445
Val Gly Gly Arg Glu Ala Arg Leu Ser His Asp Glu Ile Leu Ile Leu						
		450		455		460
Phe His Glu Thr Gly His Gly Leu His His Leu Leu Thr Gln Val Asp						
465		470		475		480
Glu Leu Gly Val Ser Gly Ile Asn Gly Val Glu Trp Asp Ala Val Glu						
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Leu Pro Ser Gln Phe Met Glu Asn Phe Val Trp Glu Tyr Asn Val Leu						
		500		505		510
Ala Gln Met Ser Ala His Glu Glu Thr Gly Val Pro Leu Pro Lys Glu						
		515		520		525
Leu Phe Asp Lys Met Leu Ala Ala Lys Asn Phe Gln Arg Gly Met Phe						

530		535		540
Leu Val Arg Gln Met	Glu Phe Ala Leu Phe Asp	Met Met Ile Tyr Ser		
545	550	555	560	
Glu Asp Asp Glu Gly	Arg Leu Lys Asn Trp	Gln Gln Val Leu Asp Ser		
	565	570	575	
Val Arg Lys Lys Val	Ala Val Ile Gln Pro Pro	Glu Tyr Asn Arg Phe		
	580	585	590	
Ala Leu Ser Phe Gly	His Ile Phe Ala Gly Gly	Tyr Ser Ala Gly Tyr		
	595	600	605	
Tyr Ser Tyr Ala Trp	Ala Glu Val Leu Ser Ala	Asp Ala Tyr Ala Ala		
	610	615	620	
Phe Glu Glu Ser Asp	Asp Val Ala Ala Thr Gly	Lys Arg Phe Trp Gln		
	625	630	635	640
Glu Ile Leu Ala Val	Gly Gly Ser Arg Ser	Ala Ala Glu Ser Phe Lys		
	645	650	655	
Ala Phe Arg Gly Arg	Glu Pro Ser Ile Asp	Ala Leu Leu Arg His Ser		
	660	665	670	
Gly Phe Asp Asn Ala	Val			
	675			

<210> 491  
 <211> 2037  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 491  
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 atcaaagccc aaacgcacac cggctgggca aacactgtcg aacccttgac cggcatcacc 180  
 gaacgcgtcg gcaggatttg gggcgtggtg tcgcacctca actcgtcac cgacacgcc 240  
 gaactgcgcg ccgcctacaa tgaattaatg cccgaaatta ccgtcttctt caccgaaatc 300  
 ggacaagaca tcgagctgta caaccgcttc aaaaccatca aaaactcccc cgagttcgac 360  
 accctctccc acgcgcaaaa aaccaaactc aaccacgatc tgcgcgattt cgtcctcagc 420  
 ggcgcggaac tgccgcccga acagcaggca gaattggcaa aactgcaaac cgaaggcgcg 480  
 caactttccg ccaaattctc caaaacgctc ctagacgcga ccgacgcgtt cggcatttac 540  
 tttgacgatg ccgcaccgct tgccggcatt ccgaagacg cgctcgccat gtttgccgct 600  
 gccgcgcaaa gcgaaggcaa aacaggctac aaaatcggtt tgcagattcc gcaactacct 660  
 gccgtcatcc aatacgccga caaccgcaaa ctgcgcgaac aaatctaccg cgcctacggt 720  
 acccgcgcca gcgagctttc agacgacggc aaattcgaca acaccgcaa catcgaccgc 780  
 acgctcgaaa acgccctgca aaccgcaaaa ctgctcgggt tcaaaaacta cgccgaattg 840  
 tcgctggcaa ccaaattggc ggacaccccc gaacaagttt taaacttctt gcacgacctc 900  
 gccgcgcgcg ccaaacccta cgccgaaaaa gacctgcgcg aagtcaaagc cttcgccccg 960  
 gaaagcctcg gcctcgccga tttgcaaccg tgggacttgg gctacgccgg cgaaaaactg 1020  
 cgcgaagcca aatacgcat cagcgaaacc gaagtcaaaa aatacttccc cgtcggcaaa 1080  
 gtattaaacg gactgttcgc ccaaatcaaa aaactctacg gcatcggatt taccgaaaaa 1140  
 accgtccccc tctggcacia agacgtgcgc tattttgaat tgcaacaaaa cggcgaaacc 1200  
 ataggcggcg tttatatgga tttgtacgca cgcgaaggca aacgcggcgg cgcgtggatg 1260

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aacgactaca aaggccgccc ccgtttttca gacggcacgc tgcaactgcc caccgcctac 1320
ctcgtctgca acttcacccc gcccgtcggc ggcaaagaag cccgcttgag ccatgacgaa 1380
atcctcaccc tcttcacaga aaccggacac ggctgcacc acctgcttac ccaagtcgac 1440
gaactgggag tatccggcat caacggcgta gaatgggacg cagtcgaact gccagtcag 1500
tttatggaaa atttcgtttg ggaatacaat gtcttggcgc aaatgtccgc ccacgaagaa 1560
accggcggtc ccctgccgaa agaactcttc gacaaaatgc tcgccgcaa aaacttccaa 1620
cgcggaatgt tcctcgccg ccaaatggag ttcgccctct ttgatgatgat gatttacagc 1680
gaagacgacg aaggccgtct gaaaaactgg caacagggtt tagacagcgt gcgcaaagaa 1740
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gcaggcggtc attccgcagg ctattacagc tacgcgtggg cggaagtatt gagcgcgagc 1860
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gaaatcctcg ccgtcggcgg atcgcgcagc gcgcgagaat ctttcaaagc cttccgcgga 1980
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<210> 492

<211> 678

<212> PRT

<213> Neisseria meningitidis

<400> 492

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Gln Ile Lys Thr Glu Asp Ile Lys Pro Ala Leu Gln Thr Ala Ile Ala
      20             25             30

Glu Ala Arg Glu Gln Ile Ala Ala Ile Lys Ala Gln Thr His Thr Gly
      35             40             45

Trp Ala Asn Thr Val Glu Pro Leu Thr Gly Ile Thr Glu Arg Val Gly
      50             55             60

Arg Ile Trp Gly Val Val Ser His Leu Asn Ser Val Thr Asp Thr Pro
      65             70             75             80

Glu Leu Arg Ala Ala Tyr Asn Glu Leu Met Pro Glu Ile Thr Val Phe
      85             90             95

Phe Thr Glu Ile Gly Gln Asp Ile Glu Leu Tyr Asn Arg Phe Lys Thr
      100            105            110

Ile Lys Asn Ser Pro Glu Phe Asp Thr Leu Ser His Ala Gln Lys Thr
      115            120            125

Lys Leu Asn His Asp Leu Arg Asp Phe Val Leu Ser Gly Ala Glu Leu
      130            135            140

Pro Pro Glu Gln Gln Ala Glu Leu Ala Lys Leu Gln Thr Glu Gly Ala
      145            150            155            160

Gln Leu Ser Ala Lys Phe Ser Gln Asn Val Leu Asp Ala Thr Asp Ala
      165            170            175

Phe Gly Ile Tyr Phe Asp Asp Ala Ala Pro Leu Ala Gly Ile Pro Glu
      180            185            190

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Asp Ala Leu Ala Met Phe Ala Ala Ala Ala Gln Ser Glu Gly Lys Thr  
 195 200 205  
 Gly Tyr Lys Ile Gly Leu Gln Ile Pro His Tyr Leu Ala Val Ile Gln  
 210 215 220  
 Tyr Ala Asp Asn Arg Lys Leu Arg Glu Gln Ile Tyr Arg Ala Tyr Val  
 225 230 235 240  
 Thr Arg Ala Ser Glu Leu Ser Asp Asp Gly Lys Phe Asp Asn Thr Ala  
 245 250 255  
 Asn Ile Asp Arg Thr Leu Glu Asn Ala Leu Gln Thr Ala Lys Leu Leu  
 260 265 270  
 Gly Phe Lys Asn Tyr Ala Glu Leu Ser Leu Ala Thr Lys Met Ala Asp  
 275 280 285  
 Thr Pro Glu Gln Val Leu Asn Phe Leu His Asp Leu Ala Arg Arg Ala  
 290 295 300  
 Lys Pro Tyr Ala Glu Lys Asp Leu Ala Glu Val Lys Ala Phe Ala Arg  
 305 310 315 320  
 Glu Ser Leu Gly Leu Ala Asp Leu Gln Pro Trp Asp Leu Gly Tyr Ala  
 325 330 335  
 Gly Glu Lys Leu Arg Glu Ala Lys Tyr Ala Phe Ser Glu Thr Glu Val  
 340 345 350  
 Lys Lys Tyr Phe Pro Val Gly Lys Val Leu Asn Gly Leu Phe Ala Gln  
 355 360 365  
 Ile Lys Lys Leu Tyr Gly Ile Gly Phe Thr Glu Lys Thr Val Pro Val  
 370 375 380  
 Trp His Lys Asp Val Arg Tyr Phe Glu Leu Gln Gln Asn Gly Glu Thr  
 385 390 395 400  
 Ile Gly Gly Val Tyr Met Asp Leu Tyr Ala Arg Glu Gly Lys Arg Gly  
 405 410 415  
 Gly Ala Trp Met Asn Asp Tyr Lys Gly Arg Arg Arg Phe Ser Asp Gly  
 420 425 430  
 Thr Leu Gln Leu Pro Thr Ala Tyr Leu Val Cys Asn Phe Thr Pro Pro  
 435 440 445  
 Val Gly Gly Lys Glu Ala Arg Leu Ser His Asp Glu Ile Leu Thr Leu  
 450 455 460  
 Phe His Glu Thr Gly His Gly Leu His His Leu Leu Thr Gln Val Asp  
 465 470 475 480  
 Glu Leu Gly Val Ser Gly Ile Asn Gly Val Glu Trp Asp Ala Val Glu  
 485 490 495

Leu Pro Ser Gln Phe Met Glu Asn Phe Val Trp Glu Tyr Asn Val Leu  
500 505 510

Ala Gln Met Ser Ala His Glu Glu Thr Gly Val Pro Leu Pro Lys Glu  
515 520 525

Leu Phe Asp Lys Met Leu Ala Ala Lys Asn Phe Gln Arg Gly Met Phe  
530 535 540

Leu Val Arg Gln Met Glu Phe Ala Leu Phe Asp Met Met Ile Tyr Ser  
545 550 555 560

Glu Asp Asp Glu Gly Arg Leu Lys Asn Trp Gln Gln Val Leu Asp Ser  
565 570 575

Val Arg Lys Glu Val Ala Val Val Arg Pro Pro Glu Tyr Asn Arg Phe  
580 585 590

Ala Asn Ser Phe Gly His Ile Phe Ala Gly Gly Tyr Ser Ala Gly Tyr  
595 600 605

Tyr Ser Tyr Ala Trp Ala Glu Val Leu Ser Ala Asp Ala Tyr Ala Ala  
610 615 620

Phe Glu Glu Ser Asp Asp Val Ala Ala Thr Gly Lys Arg Phe Trp Gln  
625 630 635 640

Glu Ile Leu Ala Val Gly Gly Ser Arg Ser Ala Ala Glu Ser Phe Lys  
645 650 655

Ala Phe Arg Gly Arg Glu Pro Ser Ile Asp Ala Leu Leu Arg His Ser  
660 665 670

Gly Phe Asp Asn Ala Ala  
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<210> 493

<211> 507

<212> DNA

<213> Neisseria gonorrhoeae

<400> 493

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tgcggaaaaa atgcggcgtg ttgccgtgat caaaatcaat atcgtgcagc atccagccca 120
aatcgcggtt tgccctcgctt tccgataacg ccgacggcgg cagcggttca cccttatccg 180
cgctttcgcc atttgccctt tcaggctgcg ggcatagggg cggaacaggc ggcggtcgaa 240
tcctgtttca tccggacaaa cgcgttgcca gtcggaaaat ccggccggcc gtgtcaaata 300
atgcgttact ttggccgggt cttgtccttt gtaagcggcg gtcttttttt gcgcgccatc 360
cgcatctgtt tgggcgcgat gcaaacggcg gctgccgtac aatcaaaatg tttggcgatt 420
tcatgcagac aggcattccg atgccgcccg acatatcgag ccggtttttg cctatccgat 480
ttggcggcat ttaggcgggt aacttga 507
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<210> 494

<211> 168

<212> PRT



<213> Neisseria gonorrhoeae

<400> 494

Met Leu Ser Pro Pro Arg Arg Lys Thr Ala Ala His Gln Ser Ser Arg  
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Leu Ser Phe Ala Cys Gly Lys Asn Ala Ala Cys Cys Arg Asp Gln Asn  
20 25 30  
Gln Tyr Arg Ala Ala Ser Ser Pro Asn Arg Gly Leu Pro Arg Phe Pro  
35 40 45  
Ile Thr Pro Thr Ala Ala Ala Val His Pro Tyr Pro Arg Phe Arg His  
50 55 60  
Leu Pro Phe Gln Ala Ala Gly Ile Gly Ala Glu Gln Ala Ala Val Glu  
65 70 75 80  
Ser Cys Phe Ile Arg Thr Asn Ala Leu Ala Val Gly Lys Ser Gly Arg  
85 90 95  
Pro Cys Gln Ile Met Arg Tyr Phe Gly Arg Val Leu Ser Phe Val Ser  
100 105 110  
Gly Gly Leu Phe Leu Arg Ala Ile Arg Ile Cys Leu Gly Ala Trp Gln  
115 120 125  
Thr Ala Ala Ala Val Gln Ser Lys Cys Leu Ala Ile Ser Cys Arg Gln  
130 135 140  
Ala Ser Gly Cys Arg Pro Thr Tyr Arg Ala Gly Phe Cys Leu Ser Asp  
145 150 155 160  
Leu Ala Ala Phe Arg Pro Val Thr  
165

<210> 495

<211> 333

<212> DNA

<213> Neisseria meningitidis

<400> 495

tatctgcgct ttcaactatatt gcccttttcag gctgcgggca tagggacgga acaggtagcg 60  
gtcaaatacct gtttcatcca aataaacacg ttggtagtcg gaaaattcgg ccggctgtgt 120  
caaataatgc gttacttttg ccgggtcttg ttctttgtaa gtggtggtct ttttttgcgc 180  
gttatcccca tctgtttgag tgcataagcaa atggtggctg ccgtacaatc aaaatgtttg 240  
gcgatttcat gcagataggc atccgggtgt tgcccaacat attgagccgg tttttgccta 300  
tccgatttga cggcatttag accggttaact tga 333

<210> 496

<211> 110

<212> PRT

<213> Neisseria meningitidis

<400> 496

Tyr Leu Arg Phe His Tyr Leu Pro Phe Gln Ala Ala Gly Ile Gly Thr  
 1 5 10 15  
 Glu Gln Val Ala Val Lys Ser Cys Phe Ile Gln Ile Asn Thr Leu Val  
 20 25 30  
 Val Gly Lys Phe Gly Arg Leu Cys Gln Ile Met Arg Tyr Phe Gly Arg  
 35 40 45  
 Val Leu Phe Phe Val Ser Gly Gly Leu Phe Leu Arg Val Ile Pro Ile  
 50 55 60  
 Cys Leu Ser Ala Xaa Gln Met Val Ala Ala Val Gln Ser Lys Cys Leu  
 65 70 75 80  
 Ala Ile Ser Cys Arg Xaa Ala Ser Gly Cys Cys Pro Thr Tyr Xaa Ala  
 85 90 95  
 Gly Phe Cys Leu Ser Asp Leu Thr Ala Phe Arg Pro Val Thr  
 100 105 110

<210> 497  
 <211> 333  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 497  
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 caaataatgc gttacttttg cgggtcttg ttctttgtaa gtggtggtct tttttgcg 180  
 gttatcccca tctgtttgag tgcatagcaa atggtggctg ccgtacaatc aaaatgtttg 240  
 gcgatttcat gcagataggc atcctggtgt tgcccaacat attgagccgg tttttgccta 300  
 tccgatttga cggcatttag accgtaact tga 333

<210> 498  
 <211> 107  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 498  
 Tyr Leu Arg Phe His Tyr Leu Pro Phe Gln Ala Ala Gly Ile Gly Thr  
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 20 25 30  
 Val Gly Lys Phe Gly Gln Leu Cys Gln Ile Met Arg Tyr Phe Gly Arg  
 35 40 45  
 Val Leu Phe Phe Val Ser Gly Gly Leu Phe Leu Arg Val Ile Pro Ile  
 50 55 60  
 Cys Leu Ser Ala Gln Met Val Ala Ala Val Gln Ser Lys Cys Leu Ala  
 65 70 75 80

Ile Ser Cys Arg Ala Ser Trp Cys Cys Pro Thr Tyr Ala Gly Phe Cys  
85 90 95

Leu Ser Asp Leu Thr Ala Phe Arg Pro Val Thr  
100 105

<210> 499  
<211> 840  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 499  
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ggcgatgtcg atgccactac ggaagcggca acgcagaccc gcatccagcc tgcggacaa 180  
ttgacgatgg gtgacggcat ccccgctcggc gaacgccaaag gcgaacagat tttcggcaaa 240  
atctgtatcc aatgccacgc ggcgacagc aatgtgccga acgctccgaa actggaacac 300  
aacggcgact gggcgccgcg tatcgcgcaa ggcttcgata ccttgttcca acacgcgctg 360  
aacggcttta acgcatgcc tgccaaaggc ggtgcggcag acctgaccga tcaggaactc 420  
aaacgggcca ttacctacat ggcgaataaa agcggcgggt ctttcccgaa tcctgatgag 480  
gctgcgcctg ccgacaatgc cgcttcagga acagcttctg ctctgccga tagtgcagct 540  
ccggcagaag cgaaggcaga agacaagggt gcggcagccc ctgcggtcgg cgttgacggg 600  
aaaaaagtct tcgaagcaac ctgtcagggt tgccacggcg gttcgattcc cggattccc 660  
ggcataggca aaaaagacga ttgggcaccg cgtatcaaaa aaggcaaaga aaccttgac 720  
aaacatgccc ttgaaggctt taacgcgatg ccggccaaag gcggcaatgc aggtttgagc 780  
gatgacgaag tcaaagcggc tgttgactat atggcaaacc aatccggtgc aaaattctaa 840

<210> 500  
<211> 279  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 500  
Met Lys Gln Leu Arg Asp Asn Lys Ala Gln Gly Ser Ala Leu Phe Thr  
1 5 10 15  
Leu Val Ser Gly Ile Val Ile Val Ile Ala Val Leu Tyr Phe Leu Ile  
20 25 30  
Lys Leu Ala Gly Ser Gly Ser Phe Gly Asp Val Asp Ala Thr Thr Glu  
35 40 45  
Ala Ala Thr Gln Thr Arg Ile Gln Pro Val Gly Gln Leu Thr Met Gly  
50 55 60  
Asp Gly Ile Pro Val Gly Glu Arg Gln Gly Glu Gln Ile Phe Gly Lys  
65 70 75 80  
Ile Cys Ile Gln Cys His Ala Ala Asp Ser Asn Val Pro Asn Ala Pro  
85 90 95  
Lys Leu Glu His Asn Gly Asp Trp Ala Pro Arg Ile Ala Gln Gly Phe  
100 105 110  
Asp Thr Leu Phe Gln His Ala Leu Asn Gly Phe Asn Ala Met Pro Ala

115	120	125
Lys Gly Gly Ala Ala Asp Leu Thr Asp Gln Glu Leu Lys Arg Ala Ile 130 135 140		
Thr Tyr Met Ala Asn Lys Ser Gly Gly Ser Phe Pro Asn Pro Asp Glu 145 150 155 160		
Ala Ala Pro Ala Asp Asn Ala Ala Ser Gly Thr Ala Ser Ala Pro Ala 165 170 175		
Asp Ser Ala Ala Pro Ala Glu Ala Lys Ala Glu Asp Lys Gly Ala Ala 180 185 190		
Ala Pro Ala Val Gly Val Asp Gly Lys Lys Val Phe Glu Ala Thr Cys 195 200 205		
Gln Val Cys His Gly Gly Ser Ile Pro Gly Ile Pro Gly Ile Gly Lys 210 215 220		
Lys Asp Asp Trp Ala Pro Arg Ile Lys Lys Gly Lys Glu Thr Leu His 225 230 235 240		
Lys His Ala Leu Glu Gly Phe Asn Ala Met Pro Ala Lys Gly Gly Asn 245 250 255		
Ala Gly Leu Ser Asp Asp Glu Val Lys Ala Ala Val Asp Tyr Met Ala 260 265 270		
Asn Gln Ser Gly Ala Lys Phe 275		

<210> 501  
 <211> 619  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 501  
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 aacgctccga aactggaaca caacggcgat trggcaccgc gtatcggcaa ggcttcgata 120  
 ccttggtcca acacgcgctg aacggcttta acgccatgcc tgcaaaaggc ggtgcggcag 180  
 acctgaccga tcaggaactt aaacgggcca ttacttacat ggcgaacaaa agcggcggtt 240  
 ctttcccgaa tcctgatgag gctgcgcctg ccgacaatgc cgcttcagga acagcttctg 300  
 ctcttgccga tagtgacgct ccggcagaag cgaaggcaga agacaagggt gcggcacccc 360  
 tgcggtcggc gttgacggtg aaaaagtctt cgaagcaacc tgtcaggtgt gccacggcgg 420  
 ttcgattccc ggtattcccg gcataggcaa aaaagacgat tgggcaccgc gtatcaaaaa 480  
 aggcaaagaa accttgacaa aacacgccct tgaaggcttt aacgcgatgc ctgccaaarg 540  
 cggcaatgca ggtttgagcg atgacgaagt caaagcggct gttgactata tggcaaacca 600  
 atccggtgca aaattctaa 619

<210> 502  
 <211> 204  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 502

Gly Glu Gln Ile Phe Gly Lys Ile Cys Ile Gln Cys His Ala Ala Asp  
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Ser Asn Val Pro Asn Ala Pro Lys Leu Glu His Asn Gly Asp Xaa Ala  
20 25 30

Pro Arg Ile Gln Gly Phe Asp Thr Leu Phe Gln His Ala Leu Asn Gly  
35 40 45

Phe Asn Ala Met Pro Ala Lys Gly Gly Ala Ala Asp Leu Thr Asp Gln  
50 55 60

Glu Leu Lys Arg Ala Ile Thr Tyr Met Ala Asn Lys Ser Gly Gly Ser  
65 70 75 80

Phe Pro Asn Pro Asp Glu Ala Ala Pro Ala Asp Asn Ala Ala Ser Gly  
85 90 95

Thr Ala Ser Ala Pro Ala Asp Ser Ala Ala Pro Ala Glu Ala Lys Ala  
100 105 110

Glu Asp Lys Gly Ala Ala Pro Ala Val Gly Val Asp Gly Lys Lys Val  
115 120 125

Phe Glu Ala Thr Cys Gln Val Cys His Gly Gly Ser Ile Pro Gly Ile  
130 135 140

Pro Gly Ile Gly Lys Lys Asp Asp Trp Ala Pro Arg Ile Lys Lys Gly  
145 150 155 160

Lys Glu Thr Leu His Lys His Ala Leu Glu Gly Phe Asn Ala Met Pro  
165 170 175

Ala Lys Xaa Gly Asn Ala Gly Leu Ser Asp Asp Glu Val Lys Ala Ala  
180 185 190

Val Asp Tyr Met Ala Asn Gln Ser Gly Ala Lys Phe  
195 200

<210> 503

<211> 840

<212> DNA

<213> Neisseria meningitidis

<400> 503

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ggcgatgtcg atgccactac ggaagcagca acgcagaccc gtatccagcc tgtcggacaa 180  
ttgacgatgg gcgacggcat ccccgtcggc gaacgccaag gcgaacagat tttcggcaaa 240  
atctgtatcc aatgccacgc ggcggacagc aatgtgccga acgctccgaa actggaacac 300  
aacggcgatt gggcgccgcg tatcgcgcaa ggcttcgata ccttgttcca acacgcgctg 360  
aacggccttta acgcatgcc tgccaaaggc ggtgcggtag acctgaccga tcaggaactc 420  
aaacgggcga ttacttacat ggcaacaaa agcggcggtt ctttcccga tctgatgag 480  
gctgcgcctg ccgacaatgc cgcttcagga acagcttctg ctctgcccga tagtcgagct 540  
ccggcagaag cgaaggcaga agacaagggt gcggcagccc ctgcggtcgg cgttgacggt 600

aaaaaagtct tcgaagcaac ctgtcaggtg tgccacggcg gttcgattcc cggatttccc 660  
 ggcataggca aaaaagacga ttgggcaccg cgtatcaaaa aaggcaaaga aaccttgcac 720  
 aaacacgccc ttgaaggctt taacgcgatg cctgccaaag gcggcaatgc aggtttgagc 780  
 gatgacgaag tcaaagcggc tgttgactat atggcaaacc aatccggtgc aaaattctaa 840

<210> 504

<211> 279

<212> PRT

<213> Neisseria meningitidis

<400> 504

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Leu	Val	Ser	Gly	Ile	Val	Ile	Val	Ile	Ala	Val	Leu	Tyr	Phe	Leu	Ile
			20					25					30		
Lys	Leu	Ala	Gly	Ser	Gly	Ser	Phe	Gly	Asp	Val	Asp	Ala	Thr	Thr	Glu
		35					40					45			
Ala	Ala	Thr	Gln	Thr	Arg	Ile	Gln	Pro	Val	Gly	Gln	Leu	Thr	Met	Gly
		50				55					60				
Asp	Gly	Ile	Pro	Val	Gly	Glu	Arg	Gln	Gly	Glu	Gln	Ile	Phe	Gly	Lys
65					70				75						80
Ile	Cys	Ile	Gln	Cys	His	Ala	Ala	Asp	Ser	Asn	Val	Pro	Asn	Ala	Pro
				85					90					95	
Lys	Leu	Glu	His	Asn	Gly	Asp	Trp	Ala	Pro	Arg	Ile	Ala	Gln	Gly	Phe
			100					105					110		
Asp	Thr	Leu	Phe	Gln	His	Ala	Leu	Asn	Gly	Phe	Asn	Ala	Met	Pro	Ala
		115					120					125			
Lys	Gly	Gly	Ala	Val	Asp	Leu	Thr	Asp	Gln	Glu	Leu	Lys	Arg	Ala	Ile
	130					135					140				
Thr	Tyr	Met	Ala	Asn	Lys	Ser	Gly	Gly	Ser	Phe	Pro	Asn	Pro	Asp	Glu
145					150					155					160
Ala	Ala	Pro	Ala	Asp	Asn	Ala	Ala	Ser	Gly	Thr	Ala	Ser	Ala	Pro	Ala
			165						170					175	
Asp	Ser	Ala	Ala	Pro	Ala	Glu	Ala	Lys	Ala	Glu	Asp	Lys	Gly	Ala	Ala
		180						185					190		
Ala	Pro	Ala	Val	Gly	Val	Asp	Gly	Lys	Lys	Val	Phe	Glu	Ala	Thr	Cys
		195					200					205			
Gln	Val	Cys	His	Gly	Gly	Ser	Ile	Pro	Gly	Ile	Pro	Gly	Ile	Gly	Lys
	210					215					220				
Lys	Asp	Asp	Trp	Ala	Pro	Arg	Ile	Lys	Lys	Gly	Lys	Glu	Thr	Leu	His
225					230					235					240

Lys His Ala Leu Glu Gly Phe Asn Ala Met Pro Ala Lys Gly Gly Asn  
245 250 255

Ala Gly Leu Ser Asp Asp Glu Val Lys Ala Ala Val Asp Tyr Met Ala  
260 265 270

Asn Gln Ser Gly Ala Lys Phe  
275

<210> 505

<211> 378

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 505

atggaagcct tcaaaaccct aatttggatt attaatat tttccgcttt ggccgtcatc 60  
gtgttagtat tgctccaaca cggcaaaggc gcggatgccg gcgcgacctt cggatcggga 120  
agcggcagcg cgcaaggcgt attcggctct gccggcaacg ccaacttcct cagccgctcg 180  
accgccgttg cagcaacatt tttctttgca acctgcatgg gctatggtgt atattcacac 240  
ccacacgaca aaacacgggt tggacttcag caacatacga cagactcagc aagcacccaa 300  
acccgtaagc aataccgaac cttctgcccc tgttcctcag cagcagaaat aacagttttt 360  
caaatgccga catggtga 378

<210> 506

<211> 125

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 506

Met Glu Ala Phe Lys Thr Leu Ile Trp Ile Ile Asn Ile Ile Ser Ala  
1 5 10 15

Leu Ala Val Ile Val Leu Val Leu Leu Gln His Gly Lys Gly Ala Asp  
20 25 30

Ala Gly Ala Thr Phe Gly Ser Gly Ser Gly Ser Ala Gln Gly Val Phe  
35 40 45

Gly Ser Ala Gly Asn Ala Asn Phe Leu Ser Arg Ser Thr Ala Val Ala  
50 55 60

Ala Thr Phe Phe Phe Ala Thr Cys Met Gly Tyr Gly Val Tyr Ser His  
65 70 75 80

Pro His Asp Lys Thr Arg Phe Gly Leu Gln Gln His Thr Thr Asp Ser  
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<210> 507

<211> 114  
<212> DNA  
<213> *Neisseria meningitidis*

<400> 507  
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<210> 508  
<211> 38  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 508  
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Ala Gly Ala Thr Phe Gly  
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<212> DNA  
<213> *Neisseria meningitidis*

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accgccgttg cagcaacatt tttctttgca acctgcatgg gctatggtgt atattcacac 240  
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<210> 510  
<211> 125  
<212> PRT  
<213> *Neisseria meningitidis*

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20 25 30  
Ala Gly Ala Thr Phe Gly Ser Gly Ser Gly Ser Ala Gln Gly Val Phe  
35 40 45  
Gly Ser Ala Gly Asn Ala Asn Phe Leu Ser Arg Ser Thr Ala Val Ala  
50 55 60



Ala Thr Phe Phe Phe Ala Thr Cys Met Gly Tyr Gly Val Tyr Ser His  
65 70 75 80

Pro His Asp Lys Thr Arg Phe Gly Leu Gln Gln Arg Thr Thr Asn Ser  
85 90 95

Ala Ser Thr Gln Thr Arg Lys Gln Tyr Arg Thr Phe Cys Pro Cys Ser  
100 105 110

Ser Ala Ala Glu Ile Thr Val Phe Gln Met Pro Thr Trp  
115 120 125

<210> 511

<211> 1596

<212> DNA

<213> Neisseria gonorrhoeae

<400> 511

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<210> 512

<211> 531

<212> PRT

<213> Neisseria gonorrhoeae

<400> 512

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 20 25 30  
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 35 40 45  
 Lys Thr Gly Lys Phe Ala Thr Ser Asp Trp Met Asp Ile Glu Lys Gln  
 50 55 60  
 Arg Gly Ile Ser Val Ala Ser Ser Val Met Gln Phe Asp Tyr Lys Asp  
 65 70 75 80  
 His Thr Val Asn Leu Leu Asp Thr Pro Gly His Gln Asp Phe Ser Glu  
 85 90 95  
 Asp Thr Tyr Arg Val Leu Thr Ala Val Asp Ser Ala Leu Met Val Ile  
 100 105 110  
 Asp Ala Ala Lys Gly Val Glu Ala Gln Thr Ile Lys Leu Leu Asn Val  
 115 120 125  
 Cys Arg Leu Arg Asp Thr Pro Ile Val Thr Phe Met Asn Lys Tyr Asp  
 130 135 140  
 Arg Glu Val Arg Asp Ser Leu Glu Leu Leu Asp Glu Val Glu Asp Ile  
 145 150 155 160  
 Leu Gln Ile Arg Cys Ala Pro Val Thr Trp Pro Ile Gly Met Gly Lys  
 165 170 175  
 Asn Phe Lys Gly Val Tyr His Ile Leu Asn Asp Glu Ile Tyr Leu Phe  
 180 185 190  
 Glu Ala Gly Gly Glu Arg Leu Pro His Glu Phe Asp Ile Ile Lys Gly  
 195 200 205  
 Ile Asn Asn Pro Glu Leu Glu Gln Arg Phe Pro Leu Glu Ile Gln Gln  
 210 215 220  
 Leu Arg Asp Glu Ile Glu Leu Val Gln Ala Ala Ser Asn Glu Phe Asn  
 225 230 235 240  
 Leu Asp Glu Phe Leu Ala Gly Glu Leu Thr Pro Val Phe Phe Gly Ser  
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 Ala Ile Asn Asn Phe Gly Ile Gln Glu Ile Leu Asn Ser Leu Ile Asp  
 260 265 270  
 Trp Ala Pro Ala Pro Lys Pro Arg Asp Ala Thr Met Arg Met Val Gly  
 275 280 285  
 Pro Asp Glu Pro Lys Phe Ser Gly Phe Ile Phe Lys Ile Gln Ala Asn  
 290 295 300  
 Met Asp Pro Lys His Arg Asp Arg Ile Ala Phe Leu Arg Val Cys Ser  
 305 310 315 320



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<210> 514

<211> 531

<212> PRT

<213> *Neisseria meningitidis*

<400> 514

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      20             25             30

Leu Leu Phe Ser Gly Ala Ile Gln Ser Ala Gly Thr Val Lys Gly Lys
      35             40             45

Lys Thr Gly Lys Phe Ala Thr Ser Asp Trp Met Glu Ile Glu Lys Gln
      50             55             60

Arg Gly Ile Ser Val Ala Ser Ser Val Met Gln Phe Asp Tyr Lys Asp
      65             70             75             80

His Thr Val Asn Leu Leu Asp Thr Pro Gly His Gln Asp Phe Ser Glu
      85             90             95

Asp Thr Tyr Arg Val Leu Thr Ala Val Asp Ser Ala Leu Met Val Ile
      100            105            110

Asp Ala Ala Lys Gly Val Glu Ala Gln Thr Ile Lys Leu Leu Asn Val
      115            120            125

Cys Arg Leu Arg Asp Thr Pro Ile Val Thr Phe Met Asn Lys Tyr Asp
      130            135            140

Arg Glu Val Arg Asp Ser Leu Glu Leu Leu Asp Glu Val Glu Asn Ile
      145            150            155            160

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 Ile Asp Asn Pro Glu Leu Glu Gln Arg Phe Pro Leu Glu Ile Gln Gln  
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 Leu Arg Asp Glu Ile Glu Leu Val Gln Ala Ala Ser Asn Glu Phe Asn  
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 245 250 255  
 Ala Ile Asn Asn Phe Gly Ile Gln Glu Ile Leu Asn Ser Leu Ile Asp  
 260 265 270  
 Trp Ala Pro Ala Pro Lys Pro Arg Asp Ala Thr Val Arg Met Val Glu  
 275 280 285  
 Pro Asp Glu Pro Lys Phe Ser Gly Phe Ile Phe Lys Ile Gln Ala Asn  
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 Met Asp Pro Lys His Arg Asp Arg Ile Ala Phe Leu Arg Val Cys Ser  
 305 310 315 320  
 Gly Lys Phe Glu Arg Gly Met Lys Met Lys His Leu Arg Ile Asn Arg  
 325 330 335  
 Glu Ile Ala Ala Ser Ser Val Val Thr Phe Met Ser His Asp Arg Glu  
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 Leu Val Glu Glu Ala Tyr Ala Gly Asp Ile Ile Gly Ile Pro Asn His  
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 Gly Asn Ile Gln Ile Gly Asp Ser Phe Ser Glu Gly Glu Gln Leu Ala  
 370 375 380  
 Phe Thr Gly Ile Pro Phe Phe Ala Pro Glu Leu Phe Arg Ser Val Arg  
 385 390 395 400  
 Ile Lys Asn Pro Leu Lys Ile Lys Gln Leu Gln Lys Gly Leu Gln Gln  
 405 410 415  
 Leu Gly Glu Glu Gly Ala Val Gln Val Phe Lys Pro Met Ser Gly Ala  
 420 425 430  
 Asp Leu Ile Leu Gly Ala Val Gly Val Leu Gln Phe Glu Val Val Thr  
 435 440 445  
 Ser Arg Leu Ala Asn Glu Tyr Gly Val Glu Ala Val Phe Asp Ser Ala

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 Ser Ile Trp Ser Ala Arg Trp Val Ser Cys Asp Asp Lys Lys Lys Leu  
 465                      470                      475                      480  
 Ala Glu Phe Glu Lys Ala Asn Ala Gly Asn Leu Ala Ile Asp Ala Gly  
                     485                      490                      495  
 Gly Asn Leu Ala Tyr Leu Ala Pro Asn Arg Val Asn Leu Gly Leu Thr  
                     500                      505                      510  
 Gln Glu Arg Trp Pro Asp Ile Val Phe His Glu Thr Arg Glu His Ser  
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<210> 515  
 <211> 1596  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 515  
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<210> 516  
 <211> 531  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 516

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			20					25					30		
Leu	Leu	Phe	Ser	Gly	Ala	Ile	Gln	Ser	Ala	Gly	Thr	Val	Lys	Gly	Lys
			35					40					45		
Lys	Thr	Gly	Lys	Phe	Ala	Thr	Ser	Asp	Trp	Met	Asp	Ile	Glu	Lys	Gln
	50					55					60				
Arg	Gly	Ile	Ser	Val	Ala	Ser	Ser	Val	Met	Gln	Phe	Asp	Tyr	Lys	Asp
65					70					75					80
His	Thr	Val	Asn	Leu	Leu	Asp	Thr	Pro	Gly	His	Gln	Asp	Phe	Ser	Glu
			85						90					95	
Asp	Thr	Tyr	Arg	Val	Leu	Thr	Ala	Val	Asp	Ser	Ala	Leu	Met	Val	Ile
			100					105					110		
Asp	Ala	Ala	Lys	Gly	Val	Glu	Ala	Gln	Thr	Ile	Lys	Leu	Leu	Asn	Val
		115					120					125			
Cys	Arg	Leu	Arg	Asn	Thr	Pro	Ile	Val	Thr	Phe	Met	Asn	Lys	Tyr	Asp
		130				135					140				
Arg	Glu	Val	Arg	Asp	Ser	Leu	Glu	Leu	Leu	Asp	Glu	Val	Glu	Asn	Ile
145					150					155					160
Leu	Gln	Ile	Arg	Cys	Ala	Pro	Val	Thr	Trp	Pro	Ile	Gly	Met	Gly	Lys
				165					170					175	
Asn	Phe	Lys	Gly	Val	Tyr	His	Ile	Leu	Asn	Asp	Glu	Ile	Tyr	Leu	Phe
			180					185					190		
Glu	Ala	Gly	Gly	Glu	Arg	Leu	Pro	His	Glu	Phe	Asp	Ile	Ile	Lys	Gly
		195					200					205			
Ile	Asp	Asn	Pro	Glu	Leu	Glu	Gln	Arg	Phe	Pro	Leu	Glu	Ile	Gln	Gln
	210					215					220				
Leu	Arg	Asp	Glu	Ile	Glu	Leu	Val	Gln	Ala	Ala	Ser	Asn	Glu	Phe	Asn
225					230					235					240
Leu	Asp	Glu	Phe	Leu	Ala	Gly	Glu	Leu	Thr	Pro	Val	Phe	Phe	Gly	Ser
				245					250					255	
Ala	Ile	Asn	Asn	Phe	Gly	Ile	Gln	Glu	Ile	Leu	Asn	Ser	Leu	Ile	Glu
			260					265					270		
Trp	Ala	Pro	Ala	Pro	Lys	Pro	Arg	Asp	Ala	Thr	Val	Arg	Met	Val	Glu
		275					280					285			

Pro Asp Glu Pro Lys Phe Ser Gly Phe Ile Phe Lys Ile Gln Ala Asn  
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 Met Asp Pro Lys His Arg Asp Arg Ile Ala Phe Leu Arg Val Cys Ser  
 305 310 315 320  
 Gly Lys Phe Glu Arg Gly Met Lys Met Lys His Leu Arg Ile Asn Arg  
 325 330 335  
 Glu Ile Ala Ala Ser Ser Val Val Thr Phe Met Ser His Asp Arg Glu  
 340 345 350  
 Leu Val Glu Glu Ala Tyr Ala Gly Asp Ile Ile Gly Ile Pro Asn His  
 355 360 365  
 Gly Asn Ile Gln Ile Gly Asp Ser Phe Ser Glu Gly Glu Gln Leu Thr  
 370 375 380  
 Phe Thr Gly Ile Pro Phe Phe Ala Pro Glu Leu Phe Arg Ser Val Arg  
 385 390 395 400  
 Ile Lys Asn Pro Leu Lys Ile Lys Gln Leu Gln Lys Gly Leu Gln Gln  
 405 410 415  
 Leu Gly Glu Glu Gly Ala Val Gln Val Phe Lys Pro Met Ser Gly Ala  
 420 425 430  
 Asp Leu Ile Leu Gly Ala Val Gly Val Leu Gln Phe Glu Val Val Thr  
 435 440 445  
 Ser Arg Leu Ala Asn Glu Tyr Gly Val Glu Ala Val Phe Asp Asn Ala  
 450 455 460  
 Ser Ile Trp Ser Ala Arg Trp Val Ser Cys Asp Asp Lys Lys Lys Leu  
 465 470 475 480  
 Ala Glu Phe Glu Lys Ala Asn Ala Gly Asn Leu Ala Ile Asp Ala Gly  
 485 490 495  
 Gly Asn Leu Ala Tyr Leu Ala Pro Asn Arg Val Asn Leu Gly Leu Thr  
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 Val Lys Leu  
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<210> 517

<211> 888

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 517

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<210> 518

<211> 295

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 518

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Gln Leu Ala Ala Leu His His Ala Gly His Glu Leu Val Leu Val Ser
  35              40              45

Ser Gly Ala Val Ala Ala Gly Phe Gly Ala Leu Gly Phe Lys Lys Arg
  50              55              60

Pro Val Lys Ile Ala Asp Lys Gln Ala Ser Ala Val Gly Gln Gly
  65              70              75              80

Leu Leu Met Glu Glu Tyr Thr Ala Asn Leu Ser Ser Asp Gly Ile Val
          85              90              95

Ser Ala Gln Ile Leu Leu Ser Arg Ala Asp Phe Ala Asp Lys Arg Arg
 100              105              110

Tyr Gln Asn Ala Gly Gly Ala Leu Ser Val Leu Leu Gln Arg Arg Ala
 115              120              125

Ile Pro Ile Ile Asn Glu Asn Asp Thr Val Ser Val Glu Glu Leu Lys
 130              135              140

Ile Gly Asp Asn Asp Thr Leu Ser Ala Gln Val Ala Ala Met Ile Gln
 145              150              155              160

Ala Asp Leu Leu Val Leu Leu Thr Asp Ile Asp Gly Leu Tyr Thr Gly
          165              170              175

Asn Pro Asn Ser Asn Pro Asp Ala Val Arg Leu Asp Lys Ile Glu His
          180              185              190

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Ile Asn His Glu Ile Ile Glu Met Ala Gly Gly Ser Gly Ser Ala Asn  
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 Gly Thr Gly Gly Met Leu Thr Lys Ile Lys Ala Ala Thr Ile Ala Ala  
 210 215 220  
 Glu Ser Gly Val Pro Val Tyr Ile Cys Ser Ser Leu Lys Pro Asp Ser  
 225 230 235 240  
 Leu Ala Glu Ala Ala Glu His Gln Ala Asp Gly Ser Phe Phe Val Pro  
 245 250 255  
 Arg Ala Lys Gly Leu Arg Thr Gln Lys Gln Trp Leu Ala Phe Tyr Ser  
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 Ser Glu Gln Gly Lys Ala Cys  
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<210> 519  
 <211> 1110  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 519  
 atgaaatata aaagaatcgt atttaaagtc ggcacatctt cgattaccca ttccggacggc 60  
 agtctctcgc gcggcaaaat ccaaaccatc acctgccagc ttgccgcatt gcatcatgcg 120  
 ggacacgagc tggctctggt gtcttccggc gcggttgccg cagggttcgg tgcgctgggt 180  
 ttcaaaaaac gtccggtcaa aatcgccgac aaacaggctt ccgccgccgt cgggcagggg 240  
 ctgctgatgg aagaatatac ggcaaacctg tcttcagacg gcatcggtgc cgcgcaaatc 300  
 ctgctcagcc gcgccgactt tgccgacaaa cgccgctacc aaaatgccgg cggcgcaactt 360  
 tccgtgctgc tgcaacgccg gcgcgtcccc atcatcaatg aaaacgatac ggtttcgggt 420  
 gaggaattga aaatcggcga caacgacaca ttgagtgcgc aagtggcggc gatgatacag 480  
 gcagacctct tgggtgctgct gaccgacata gacgggtctt acacgggcaa cccgaacagc 540  
 aatcccgatg ccgtacggct ggacaaaatc gaacacatca accatgaaat catcgaaatg 600  
 gcgggcggct cgggttcggc aaacggcacg ggcggtatgc tgacaaaaat caaagcggca 660  
 accatcgccg ccgaatccgg cgtaccgggtg tatatctgtt cctcgtcaa acccgatgca 720  
 cttgccgaag ctgccgaaca tcaggcggac ggctcgtttt tcgtcccccg tgccaaaggt 780  
 ttgcggacgc agaagcaatg gctggcggtc tattccgaaa gccggggcag cgtttatgtg 840  
 gacgaagggt cggaacacgc tttgtccgaa caggggaaaa gcctgctgat gtcgggcatt 900  
 gccggaatcg aagggcattt ttcccgtatg gacaccgtaa ccgtgtacag caaggcaacc 960  
 aaacagcccc tgggcaaagg gcgcgtcctg ttccggtctg ccgccgccga agacctgctc 1020  
 aaatcgcgta aggcgaaaagg cgtgttcata catcgggacg actggatttc catcacgccc 1080  
 gaaatacgcc tgcttctgac cgaattttag 1110

<210> 520  
 <211> 369  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 520  
 Met Lys Tyr Lys Arg Ile Val Phe Lys Val Gly Thr Ser Ser Ile Thr

1	5	10	15
His Ser Asp Gly Ser Leu Ser Arg Gly Lys Ile Gln Thr Ile Thr Cys	20	25	30
Gln Leu Ala Ala Leu His His Ala Gly His Glu Leu Val Leu Val Ser	35	40	45
Ser Gly Ala Val Ala Ala Gly Phe Gly Ala Leu Gly Phe Lys Lys Arg	50	55	60
Pro Val Lys Ile Ala Asp Lys Gln Ala Ser Ala Ala Val Gly Gln Gly	65	70	75
Leu Leu Met Glu Glu Tyr Thr Ala Asn Leu Ser Ser Asp Gly Ile Val	85	90	95
Ser Ala Gln Ile Leu Leu Ser Arg Ala Asp Phe Ala Asp Lys Arg Arg	100	105	110
Tyr Gln Asn Ala Gly Gly Ala Leu Ser Val Leu Leu Gln Arg Arg Ala	115	120	125
Val Pro Ile Ile Asn Glu Asn Asp Thr Val Ser Val Glu Glu Leu Lys	130	135	140
Ile Gly Asp Asn Asp Thr Leu Ser Ala Gln Val Ala Ala Met Ile Gln	145	150	155
Ala Asp Leu Leu Val Leu Leu Thr Asp Ile Asp Gly Leu Tyr Thr Gly	165	170	175
Asn Pro Asn Ser Asn Pro Asp Ala Val Arg Leu Asp Lys Ile Glu His	180	185	190
Ile Asn His Glu Ile Ile Glu Met Ala Gly Gly Ser Gly Ser Ala Asn	195	200	205
Gly Thr Gly Gly Met Leu Thr Lys Ile Lys Ala Ala Thr Ile Ala Ala	210	215	220
Glu Ser Gly Val Pro Val Tyr Ile Cys Ser Ser Leu Lys Pro Asp Ala	225	230	235
Leu Ala Glu Ala Ala Glu His Gln Ala Asp Gly Ser Phe Phe Val Pro	245	250	255
Arg Ala Lys Gly Leu Arg Thr Gln Lys Gln Trp Leu Ala Phe Tyr Ser	260	265	270
Glu Ser Arg Gly Ser Val Tyr Val Asp Glu Gly Ala Glu His Ala Leu	275	280	285
Ser Glu Gln Gly Lys Ser Leu Leu Met Ser Gly Ile Ala Gly Ile Glu	290	295	300
Gly His Phe Ser Arg Met Asp Thr Val Thr Val Tyr Ser Lys Ala Thr			

305                      310                      315                      320  
 Lys Gln Pro Leu Gly Lys Gly Arg Val Leu Phe Gly Ser Ala Ala Ala  
                                  325                                   330                                   335  
 Glu Asp Leu Leu Lys Ser Arg Lys Ala Lys Gly Val Phe Ile His Arg  
                                  340                                   345                                   350  
 Asp Asp Trp Ile Ser Ile Thr Pro Glu Ile Arg Leu Leu Leu Thr Glu  
                                  355                                   360                                   365

Phe

<210> 521  
 <211> 1110  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 521  
 atgaaatata aaagaatcgt atttaaagtc ggcacatctt cgattaccca ttcggacggc 60  
 agtctctcgc gcggcaaaat ccaaaccatc acccgccagc ttgccgcatt gcatcatgcg 120  
 ggacacgagc tgggtcttgggt gtcttccggc gcggttgccg caggggttcgg tgcgctgggt 180  
 ttcaaaaaac gtccgggtcaa aatcgccgac aaacaggctt ccgccgccgt cgggcagggg 240  
 ctgctgatgg aagaatatac ggcaaacctg tcttcagacg gcatcgtgtc cgcacaaatc 300  
 ctgctcagcc gcgccgactt tgccgacaaa cgccgctacc aaaatgccgg cggcgccactt 360  
 tccgtgctgc tgcaacgcgc cgccgtcccc atcatcaatg aaaacgatac ggtttcggtt 420  
 gaggaattga aaatcggcga caacgacaca ttgagtgcgc aagtggcggc gatgatacag 480  
 gcagacctct tgggtgctgct gaccgacata gacggtcttt acaccggcaa cccgaacagc 540  
 aatcccgatg ccgtacggct ggacaaaatc gaacacatca accatgaaat catcgaaatg 600  
 gcggggcggct cgggttcggc aaacggcaca ggcggtatgc tgactaaaat caaagcggcg 660  
 acgattgcga ccgagtccgg cgtaccggtc tatactgtt cctcgtcaa acccgatgca 720  
 cttgccgaag cggcagataa tcaggcggac ggctcgtttt tcgtcccccg tgccaaaggt 780  
 ttgcggacgc agaagcaatg gctggcgttc tattccgaaa gcaggggcgg cgtttatgtg 840  
 gacgaaggtg cggaacacgc tttgtccgaa cagggaaaaa gcctgctgat gtcgggcatt 900  
 gccggaatcg aagggcattt ttcccgtatg gacaccgtaa ccgtgtacag caaggcaacc 960  
 aaacagcctt tgggcaaagg gcgagtcctg ttccggtctg ccgccgccga agacctgtc 1020  
 aaattgcgta aggcgaaagg cgtgttcacg catcgggacg actggatttc catcacgcc 1080  
 gaaatacgcc tgcttctgac cgaattttag 1110

<210> 522  
 <211> 369  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 522  
 Met Lys Tyr Lys Arg Ile Val Phe Lys Val Gly Thr Ser Ser Ile Thr  
   1                                 5                                 10                                 15  
 His Ser Asp Gly Ser Leu Ser Arg Gly Lys Ile Gln Thr Ile Thr Arg  
                                  20                                 25                                 30  
 Gln Leu Ala Ala Leu His His Ala Gly His Glu Leu Val Leu Val Ser  
                                  35                                 40                                 45

Ser Gly Ala Val Ala Ala Gly Phe Gly Ala Leu Gly Phe Lys Lys Arg  
 50 55 60  
 Pro Val Lys Ile Ala Asp Lys Gln Ala Ser Ala Ala Val Gly Gln Gly  
 65 70 75 80  
 Leu Leu Met Glu Glu Tyr Thr Ala Asn Leu Ser Ser Asp Gly Ile Val  
 85 90 95  
 Ser Ala Gln Ile Leu Leu Ser Arg Ala Asp Phe Ala Asp Lys Arg Arg  
 100 105 110  
 Tyr Gln Asn Ala Gly Gly Ala Leu Ser Val Leu Leu Gln Arg Arg Ala  
 115 120 125  
 Val Pro Ile Ile Asn Glu Asn Asp Thr Val Ser Val Glu Glu Leu Lys  
 130 135 140  
 Ile Gly Asp Asn Asp Thr Leu Ser Ala Gln Val Ala Ala Met Ile Gln  
 145 150 155 160  
 Ala Asp Leu Leu Val Leu Leu Thr Asp Ile Asp Gly Leu Tyr Thr Gly  
 165 170 175  
 Asn Pro Asn Ser Asn Pro Asp Ala Val Arg Leu Asp Lys Ile Glu His  
 180 185 190  
 Ile Asn His Glu Ile Ile Glu Met Ala Gly Gly Ser Gly Ser Ala Asn  
 195 200 205  
 Gly Thr Gly Gly Met Leu Thr Lys Ile Lys Ala Ala Thr Ile Ala Thr  
 210 215 220  
 Glu Ser Gly Val Pro Val Tyr Ile Cys Ser Ser Leu Lys Pro Asp Ala  
 225 230 235 240  
 Leu Ala Glu Ala Ala Asp Asn Gln Ala Asp Gly Ser Phe Phe Val Pro  
 245 250 255  
 Arg Ala Lys Gly Leu Arg Thr Gln Lys Gln Trp Leu Ala Phe Tyr Ser  
 260 265 270  
 Glu Ser Arg Gly Gly Val Tyr Val Asp Glu Gly Ala Glu His Ala Leu  
 275 280 285  
 Ser Glu Gln Gly Lys Ser Leu Leu Met Ser Gly Ile Ala Gly Ile Glu  
 290 295 300  
 Gly His Phe Ser Arg Met Asp Thr Val Thr Val Tyr Ser Lys Ala Thr  
 305 310 315 320  
 Lys Gln Pro Leu Gly Lys Gly Arg Val Leu Phe Gly Ser Ala Ala Ala  
 325 330 335  
 Glu Asp Leu Leu Lys Leu Arg Lys Ala Lys Gly Val Phe Ile His Arg  
 340 345 350

Asp Asp Trp Ile Ser Ile Thr Pro Glu Ile Arg Leu Leu Leu Thr Glu  
 355 360 365

Phe

<210> 523  
 <211> 672  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 523  
 atggaatcc ggtttcagac agcattttta cgtttggttc agatgaaaac aaacgcttca 60  
 attcttaccg caacacgcct tgtatttcct gccgctgccg cacggacagg gatcggttcct 120  
 gccggttttt tccccttccc tgcggacggg ttgcggtttg ttgatgaccg cctgccagta 180  
 gcggtagatg tctgccagcg cgtaaggcag ttcggacgca agttccgccg gctcgccttc 240  
 ggtgaattgc aggcggataa cgccgttttc ctcttcgtcg taaatgccgc cactgccat 300  
 cacggggtaa aacagctctt caaacgcttc atcatcggcg gcttcaaacc aatcggtcgg 360  
 cacaatgtcc aaaccgtaaa gataggcggt gcaccaagtg taaaaatcgc tgccgccctc 420  
 gccgtcgtcg tagagccaca aatcgggcag ctttttatcc gacatcgcgg cggttggttc 480  
 catcgccatt gccaaaacca gccgttcgat ttcggaacgt tcggcggcgg taaattgcga 540  
 ttcgtcgccc aacacttcgg gcagccagtc gagcgtgcc aatttgctcg gcccgctcaa 600  
 cagcgccgtc ataaaacctt gaacctcgtc gcaacgcac gtgttgctt gttcgctttt 660  
 ggcaccaat aa 672

<210> 524  
 <211> 223  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 524  
 Met Glu Ile Arg Phe Gln Thr Ala Phe Leu Arg Leu Val Gln Met Lys  
 1 5 10 15  
 Thr Asn Ala Ser Ile Leu Thr Ala Thr Arg Leu Val Phe Pro Ala Ala  
 20 25 30  
 Ala Ala Arg Thr Gly Ile Val Pro Ala Gly Phe Phe Pro Phe Pro Ala  
 35 40 45  
 Asp Gly Leu Arg Phe Val Asp Asp Arg Leu Pro Val Ala Val Asp Val  
 50 55 60  
 Cys Gln Arg Val Arg Gln Phe Gly Arg Lys Phe Arg Gln Leu Ala Phe  
 65 70 75 80  
 Gly Glu Leu Gln Ala Asp Asn Ala Val Phe Leu Phe Val Val Asn Ala  
 85 90 95  
 Ala His Cys His His Gly Val Lys Gln Leu Phe Lys Arg Phe Ile Ile  
 100 105 110  
 Gly Gly Phe Lys Pro Ile Gly Arg His Asn Val Gln Thr Val Lys Ile  
 115 120 125

Gly Val Ala Pro Ser Val Lys Ile Ala Ala Ala Leu Ala Val Val Val  
 130 135 140  
 Glu Pro Gln Ile Gly Gln Leu Phe Ile Arg His Arg Gly Gly Cys Phe  
 145 150 155 160  
 His Arg His Cys Gln Asn Gln Pro Phe Asp Phe Gly Thr Phe Gly Gly  
 165 170 175  
 Gly Lys Leu Arg Phe Val Ala Gln His Phe Gly Gln Pro Val Glu Arg  
 180 185 190  
 Cys Gln Phe Val Arg Pro Ala Gln Gln Arg Arg His Lys Thr Leu Asn  
 195 200 205  
 Leu Val Ala Thr His Arg Val Ala Leu Phe Ala Phe Gly Ile Gln  
 210 215 220

<210> 525  
 <211> 732  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 525  
 atggaacaa acgcttcaat tcttaccgca acacgccttg tattttctgc cgctgccgca 60  
 cggacagga tcgttcctgc ctgttttttc gccttccctg cggacggttt gcggtttggt 120  
 gatgactgcc tgccagtagc ggtagatata cgccaatgca taaggcaact cggattccag 180  
 ttccgcccagc tcgccttctg tgaattgcag acggatagcg ccgttttcct cttcgtcgta 240  
 aataccgccc aatgccatga tgggataaaa caactcttca aacgcttcat catcgacggc 300  
 ttcaaaccacaa tcggtcggca caatatccaa accgtaaaga taagcattgc accatgtgta 360  
 aaaatcgctg ccgccgtctt cgttttcata cagccacaaa tcgggcagtt ttttatccga 420  
 catcgcggcg gttgtttcca tcgccattgc caaaaccagc cgttcgattt cggaacgttc 480  
 ggcggcggtg aattgcgatt cgtcgcccaa cacttcgggc agccagtcga gcggtgtcaa 540  
 tttgtccggc ccgctcaaca gcgccgtcat aaaaccttga acctcgtcgc aacgcacgt 600  
 gttgccttgt tcgcttttgg catccaacaa ttcgctcaac cgccgtttgg atgcttcggt 660  
 aaattttcgg gaatccatca ttttcctttt caaatggggt ttgcgcctta ttatcgccgc 720  
 aatgccgtct ga 732

<210> 526  
 <211> 243  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 526  
 Met Glu Thr Asn Ala Ser Ile Leu Thr Ala Thr Arg Leu Val Phe Ser  
 1 5 10 15  
 Ala Ala Ala Ala Arg Thr Gly Ile Val Pro Ala Cys Phe Phe Ala Phe  
 20 25 30  
 Pro Ala Asp Gly Leu Arg Phe Val Asp Asp Cys Leu Pro Val Ala Val  
 35 40 45  
 Asp Ile Arg Gln Cys Ile Arg Gln Leu Gly Phe Gln Phe Arg Gln Leu  
 50 55 60

Ala	Phe	Cys	Glu	Leu	Gln	Thr	Asp	Ser	Ala	Val	Phe	Leu	Phe	Val	Val
65					70					75					80
Asn	Thr	Ala	Gln	Cys	His	Asp	Gly	Ile	Lys	Gln	Leu	Phe	Lys	Arg	Phe
				85					90					95	
Ile	Ile	Asp	Gly	Phe	Lys	Pro	Ile	Gly	Arg	His	Asn	Ile	Gln	Thr	Val
			100					105					110		
Lys	Ile	Ser	Ile	Ala	Pro	Cys	Val	Lys	Ile	Ala	Ala	Ala	Val	Phe	Val
		115					120						125		
Phe	Ile	Gln	Pro	Gln	Ile	Gly	Gln	Phe	Phe	Ile	Arg	His	Arg	Gly	Gly
		130				135					140				
Cys	Phe	His	Arg	His	Cys	Gln	Asn	Gln	Pro	Phe	Asp	Phe	Gly	Thr	Phe
145					150					155					160
Gly	Gly	Gly	Lys	Leu	Arg	Phe	Val	Ala	Gln	His	Phe	Gly	Gln	Pro	Val
			165						170					175	
Glu	Arg	Cys	Gln	Phe	Val	Arg	Pro	Ala	Gln	Gln	Arg	Arg	His	Lys	Thr
			180					185						190	
Leu	Asn	Leu	Val	Ala	Thr	His	Arg	Val	Ala	Leu	Phe	Ala	Phe	Gly	Ile
		195					200					205			
Gln	Gln	Phe	Ala	Gln	Pro	Pro	Phe	Gly	Cys	Phe	Gly	Lys	Phe	Ser	Gly
	210					215					220				
Ile	His	His	Phe	Pro	Phe	Gln	Met	Gly	Phe	Ala	Pro	Tyr	Tyr	Arg	Arg
225					230					235					240
Asn Ala Val															

<210> 527

<211> 837

<212> DNA

<213> *Neisseria meningitidis*

<400> 527

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atggaacaaa acgcttcaat tcttaccgca acacgccttg tattttctgc cgctgccgca 60
cggacagga tcgttcctgc ctgttttttc gccttccctg cggacggttt gcggcttggt 120
gatgaccgcc tgccagtagc ggtagatata cgccaatgca taaggcaact cggattccag 180
ttccgccagc tcgccttctg tgaattgcag acggatagtg ccgttgtcct cttcgtcgta 240
aataccgccc aatgccatga tgggataaaa caactcttca aacgcttcat catcgacggc 300
ttcaaaccaa tcggtcggca caatatccaa accgtaaaga taagcattgc accatgtgta 360
aaaatcgctg ccgccgtcct cgttttcata cagccacaaa tcgggcagtt ttttatccga 420
catcgcggcg gttgtttcca tcgccattgc caaaaccagc cgttcgattt cggaacgttc 480
ggcggcggtg aattgcgatt cgtcgcccaa cacttcgggc agccagtcga gcggtgtcaa 540
tttgtccggc ccgctcaaca gcgcgctcat aaaaccttga acctcgtcgc aacgcacgtg 600
gttgcttgtg tcgcttttgg catccaacaa ttcgctcaac cgccgttttg atgcttcggt 660
aaattttcgg gaatccatca ttttcctttt ccaatgggtt ttgcgcccta ttatagtggg 720
ttaaatataa atcaggacaa ggcgacgaag ccgcagacag tacaaatagt acggcaaggc 780

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gaggcaacgc cgtactgggtt taaatttaat ccactatata gccgcaatgc cgtctga 837

<210> 528

<211> 278

<212> PRT

<213> Neisseria meningitidis

<400> 528

Met Glu Thr Asn Ala Ser Ile Leu Thr Ala Thr Arg Leu Val Phe Ser  
1 5 10 15

Ala Ala Ala Ala Arg Thr Gly Ile Val Pro Ala Cys Phe Phe Ala Phe  
20 25 30

Pro Ala Asp Gly Leu Arg Leu Val Asp Asp Arg Leu Pro Val Ala Val  
35 40 45

Asp Ile Arg Gln Cys Ile Arg Gln Leu Gly Phe Gln Phe Arg Gln Leu  
50 55 60

Ala Phe Cys Glu Leu Gln Thr Asp Ser Ala Val Val Leu Phe Val Val  
65 70 75 80

Asn Thr Ala Gln Cys His Asp Gly Ile Lys Gln Leu Phe Lys Arg Phe  
85 90 95

Ile Ile Asp Gly Phe Lys Pro Ile Gly Arg His Asn Ile Gln Thr Val  
100 105 110

Lys Ile Ser Ile Ala Pro Cys Val Lys Ile Ala Ala Val Phe Val  
115 120 125

Phe Ile Gln Pro Gln Ile Gly Gln Phe Phe Ile Arg His Arg Gly Gly  
130 135 140

Cys Phe His Arg His Cys Gln Asn Gln Pro Phe Asp Phe Gly Thr Phe  
145 150 155 160

Gly Gly Gly Lys Leu Arg Phe Val Ala Gln His Phe Gly Gln Pro Val  
165 170 175

Glu Arg Cys Gln Phe Val Arg Pro Ala Gln Gln Arg Arg His Lys Thr  
180 185 190

Leu Asn Leu Val Ala Thr His Arg Val Ala Leu Phe Ala Phe Gly Ile  
195 200 205

Gln Gln Phe Ala Gln Pro Pro Phe Gly Cys Phe Gly Lys Phe Ser Gly  
210 215 220

Ile His His Phe Pro Phe Pro Met Gly Phe Ala Pro Tyr Tyr Ser Gly  
225 230 235 240

Leu Asn Leu Asn Gln Asp Lys Ala Thr Lys Pro Gln Thr Val Gln Ile  
245 250 255

Val Arg Gln Gly Glu Ala Thr Pro Tyr Trp Phe Lys Phe Asn Pro Leu  
 260 265 270

Tyr Arg Arg Asn Ala Val  
 275

<210> 529  
 <211> 852  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 529  
 atgattatcc atcaccaatt cgatcccgct ctcacagta tcggcccgtg tgccgtccgc 60  
 tggatgcct taagctacat cctcggattt attcttttta cctttctcgg cagaaggcgc 120  
  
 atcgcgcaag gcttgccgt ttttacaaa gaatcgctcg acgacttcct gacatggggc 180  
 attttgggcg tgattttggg cggacgcttg ggctatgtcc tgttttacaa attctccgac 240  
 tacctcgccc atccgcttga tttttcaag gtatgggaag gcggaatgtc gttccacggc 300  
 ggcttttttg gtgtagttat tgccatatgg ttgttcagcc gcaagcacgg catcggcttc 360  
 ctcaaaactga tggacacggt cgcgcgcgtc gttccgctgg gtctcgcttc gggacgtatc 420  
 ggcaacttta tcaacggcga actttgggga cgcattaccg acattaacgc attttgggca 480  
 atgggcttcc cgcaagcgca ttacgaagat gccgaagccg ccgcgcacaa tccgctttgg 540  
 gcagaatggc tgcaacaata cggatgtctg ccgcgtcatc cctcgcagct ttatcagttt 600  
 gcccttgaag gcatctgcct gttcgccgtc gtttgctgt tttccaaaaa accgcgcccg 660  
 accgggcaga ctgccgcgt ttttctcggc ggctacggcg tgttccgctt tattgccgaa 720  
 tttgcgcgcc aaccgcagca ctatctcggg ctgctgacct tggggctgtc gatggggcaa 780  
 tggttgagcg tcccgatgat tgttttgggt atcgctcggt ttgtccgggt cggcatgaaa 840  
 aaacagcact ga 852

<210> 530  
 <211> 283  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 530  
 Met Ile Ile His His Gln Phe Asp Pro Val Leu Ile Ser Ile Gly Pro  
 1 5 10 15  
  
 Leu Ala Val Arg Trp Tyr Ala Leu Ser Tyr Ile Leu Gly Phe Ile Leu  
 20 25 30  
  
 Phe Thr Phe Leu Gly Arg Arg Arg Ile Ala Gln Gly Leu Ser Val Phe  
 35 40 45  
  
 Thr Lys Glu Ser Leu Asp Asp Phe Leu Thr Trp Gly Ile Leu Gly Val  
 50 55 60  
  
 Ile Leu Gly Gly Arg Leu Gly Tyr Val Leu Phe Tyr Lys Phe Ser Asp  
 65 70 75 80  
  
 Tyr Leu Ala His Pro Leu Asp Ile Phe Lys Val Trp Glu Gly Gly Met  
 85 90 95  
  
 Ser Phe His Gly Gly Phe Leu Gly Val Ile Ala Ile Trp Leu Phe  
 100 105 110

Ser Arg Lys His Gly Ile Gly Phe Leu Lys Leu Met Asp Thr Val Ala  
 115 120 125  
 Pro Leu Val Pro Leu Gly Leu Ala Ser Gly Arg Ile Gly Asn Phe Ile  
 130 135 140  
 Asn Gly Glu Leu Trp Gly Arg Ile Thr Asp Ile Asn Ala Phe Trp Ala  
 145 150 155 160  
 Met Gly Phe Pro Gln Ala His Tyr Glu Asp Ala Glu Ala Ala Ala His  
 165 170 175  
 Asn Pro Leu Trp Ala Glu Trp Leu Gln Gln Tyr Gly Met Leu Pro Arg  
 180 185 190  
 His Pro Ser Gln Leu Tyr Gln Phe Ala Leu Glu Gly Ile Cys Leu Phe  
 195 200 205  
 Ala Val Val Trp Leu Phe Ser Lys Lys Pro Arg Pro Thr Gly Gln Thr  
 210 215 220  
 Ala Ala Leu Phe Leu Gly Gly Tyr Gly Val Phe Arg Phe Ile Ala Glu  
 225 230 235 240  
 Phe Ala Arg Gln Pro Asp Asp Tyr Leu Gly Leu Leu Thr Leu Gly Leu  
 245 250 255  
 Ser Met Gly Gln Trp Leu Ser Val Pro Met Ile Val Leu Gly Ile Val  
 260 265 270  
 Gly Phe Val Arg Phe Gly Met Lys Lys Gln His  
 275 280

<210> 531  
 <211> 852  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 531  
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 atcgcgcaag gcttgctcgt ttttaccaaa gaatcgctcg acgacttcct gacatggggc 180  
 attttgggcg taattttggg cgggcgtttg gggttacgtcc tgttttacia gttttccgac 240  
 tacctcgccc atccgcttga tattttcaag gtatgggaag gcggaatgtc gttccacggc 300  
 ggcttttttg gtgtagttat tgccatacgg ttgttcggcc gcaaacacgg catcggcttc 360  
 ctcaaactga tggatacggg cgcaccgctc gtcccgctgg gtctcgcttc gggacgtatc 420  
 ggcaacttca tcaacggcga actttgggga cgcgttaccg acatcaacgc attttgggca 480  
 atgggcttcc cgcaggcgcg ttacgaagat gccgaagccg ccgcgcacaa tccgctttgg 540  
 gcagaatggc tgcaacaata cggtagctg ccgcgtcatc cctcgcagct ttatcagttt 600  
 gcacttgaag gcatctgcct gttcacgcgc atttggtgt tctctaaaaa acagcggctc 660  
 accggacaag tcgcctcgct cttcctcggc ggctacggca tattccgctt cattgccgaa 720  
 ttgcacgcc aacccgacga ctatctcggg ctgctgacct tggggctgtc gatggggcaa 780  
 tggttgagcg tcccgatgat tgttttgggt atcgtcggct ttgtccggtt cggcatgaaa 840  
 aaacagcact ga 852

<210> 532  
<211> 283  
<212> PRT  
<213> Neisseria meningitidis

<400> 532

Met	Ile	Thr	His	Pro	Gln	Phe	Asp	Pro	Val	Leu	Ile	Ser	Ile	Gly	Pro
1				5					10					15	
Leu	Ala	Val	Arg	Trp	Tyr	Ala	Leu	Ser	Tyr	Ile	Leu	Gly	Phe	Ile	Leu
			20					25					30		
Phe	Thr	Phe	Leu	Gly	Arg	Arg	Arg	Ile	Ala	Gln	Gly	Leu	Ser	Val	Phe
			35				40					45			
Thr	Lys	Glu	Ser	Leu	Asp	Asp	Phe	Leu	Thr	Trp	Gly	Ile	Leu	Gly	Val
	50					55					60				
Ile	Leu	Gly	Gly	Arg	Leu	Gly	Tyr	Val	Leu	Phe	Tyr	Lys	Phe	Ser	Asp
65					70					75					80
Tyr	Leu	Ala	His	Pro	Leu	Asp	Ile	Phe	Lys	Val	Trp	Glu	Gly	Gly	Met
				85					90					95	
Ser	Phe	His	Gly	Gly	Phe	Leu	Gly	Val	Val	Ile	Ala	Ile	Arg	Leu	Phe
			100					105					110		
Gly	Arg	Lys	His	Gly	Ile	Gly	Phe	Leu	Lys	Leu	Met	Asp	Thr	Val	Ala
		115					120					125			
Pro	Leu	Val	Pro	Leu	Gly	Leu	Ala	Ser	Gly	Arg	Ile	Gly	Asn	Phe	Ile
	130					135						140			
Asn	Gly	Glu	Leu	Trp	Gly	Arg	Val	Thr	Asp	Ile	Asn	Ala	Phe	Trp	Ala
145					150					155					160
Met	Gly	Phe	Pro	Gln	Ala	Arg	Tyr	Glu	Asp	Ala	Glu	Ala	Ala	Ala	His
				165					170					175	
Asn	Pro	Leu	Trp	Ala	Glu	Trp	Leu	Gln	Gln	Tyr	Gly	Met	Leu	Pro	Arg
			180					185					190		
His	Pro	Ser	Gln	Leu	Tyr	Gln	Phe	Ala	Leu	Glu	Gly	Ile	Cys	Leu	Phe
			195				200					205			
Thr	Val	Ile	Trp	Leu	Phe	Ser	Lys	Lys	Gln	Arg	Ser	Thr	Gly	Gln	Val
	210					215						220			
Ala	Ser	Leu	Phe	Leu	Gly	Gly	Tyr	Gly	Ile	Phe	Arg	Phe	Ile	Ala	Glu
225					230					235					240
Phe	Ala	Arg	Gln	Pro	Asp	Asp	Tyr	Leu	Gly	Leu	Leu	Thr	Leu	Gly	Leu
				245					250					255	
Ser	Met	Gly	Gln	Trp	Leu	Ser	Val	Pro	Met	Ile	Val	Leu	Gly	Ile	Val
			260					265					270		

Gly Phe Val Arg Phe Gly Met Lys Lys Gln His  
 275 280

<210> 533  
 <211> 852  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 533  
 atgattaccc atccccaatt cgaccccgtc cttatcagta tcggcccgtc tgccgtccgc 60  
 tggtagtccc taagctacat cctcggattt attcttttta cttttctcgg cagaaggcgc 120  
 atcgcgcaag gcttggtccg ttttaccaaa gaatcgctcg acgacttcct gacatggggc 180  
 attttgggcg taattttggg cgggcgtttg ggttacgtcc tgttttacia gttttccgac 240  
 tacctcgccc atccgcttga tttttcaag gtatgggaag gcggaatgtc gttccacggc 300  
 ggctttttgg gtgtagttat tgccatatgg ttgttcggtc gcaaacacgg catcggcttc 360  
 ctcaaaactga tggacacggc cgcaccgctc gttccactgg gtctcgcttc gggacgtatc 420  
 ggcaacttca tcaacggcga actttgggga cgcgttaccg acatcaacgc attttgggca 480  
 atgggcttcc cgcaggcgcg ttacgaagac ctggaagccg ccgcgcacaa tccgctttgg 540  
 gcagaatggc tgcaacaata cggtagtctg ccgcgtcatc cctcgcagct ttatcagttt 600  
 gcacttgaag gcatctgcct gttcgccgtc gtttggctgt tctctaaaaa acagcggccg 660  
 accggacaag tcgcctcact cttcctcggc ggctacggca tattccgctt cattgccgaa 720  
 tttgcacgcc aaccgcgacga ctatctcggg ctgctgacct tggggctgtc gatggggcaa 780  
 tggttgagcg tcccgatgat tgttttgggt atcgtcggct ttgtccggtt cggcatgaaa 840  
 aaacagcact ga 852

<210> 534  
 <211> 283  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 534  
 Met Ile Thr His Pro Gln Phe Asp Pro Val Leu Ile Ser Ile Gly Pro  
 1 5 10 15  
 Leu Ala Val Arg Trp Tyr Ala Leu Ser Tyr Ile Leu Gly Phe Ile Leu  
 20 25 30  
 Phe Thr Phe Leu Gly Arg Arg Arg Ile Ala Gln Gly Leu Ser Val Phe  
 35 40 45  
 Thr Lys Glu Ser Leu Asp Asp Phe Leu Thr Trp Gly Ile Leu Gly Val  
 50 55 60  
 Ile Leu Gly Gly Arg Leu Gly Tyr Val Leu Phe Tyr Lys Phe Ser Asp  
 65 70 75 80  
 Tyr Leu Ala His Pro Leu Asp Ile Phe Lys Val Trp Glu Gly Gly Met  
 85 90 95  
 Ser Phe His Gly Gly Phe Leu Gly Val Val Ile Ala Ile Trp Leu Phe  
 100 105 110  
 Gly Arg Lys His Gly Ile Gly Phe Leu Lys Leu Met Asp Thr Val Ala  
 115 120 125

Pro Leu Val Pro Leu Gly Leu Ala Ser Gly Arg Ile Gly Asn Phe Ile  
 130 135 140  
 Asn Gly Glu Leu Trp Gly Arg Val Thr Asp Ile Asn Ala Phe Trp Ala  
 145 150 155 160  
 Met Gly Phe Pro Gln Ala Arg Tyr Glu Asp Leu Glu Ala Ala Ala His  
 165 170 175  
 Asn Pro Leu Trp Ala Glu Trp Leu Gln Gln Tyr Gly Met Leu Pro Arg  
 180 185 190  
 His Pro Ser Gln Leu Tyr Gln Phe Ala Leu Glu Gly Ile Cys Leu Phe  
 195 200 205  
 Ala Val Val Trp Leu Phe Ser Lys Lys Gln Arg Pro Thr Gly Gln Val  
 210 215 220  
 Ala Ser Leu Phe Leu Gly Gly Tyr Gly Ile Phe Arg Phe Ile Ala Glu  
 225 230 235 240  
 Phe Ala Arg Gln Pro Asp Asp Tyr Leu Gly Leu Leu Thr Leu Gly Leu  
 245 250 255  
 Ser Met Gly Gln Trp Leu Ser Val Pro Met Ile Val Leu Gly Ile Val  
 260 265 270  
 Gly Phe Val Arg Phe Gly Met Lys Lys Gln His  
 275 280

<210> 535  
 <211> 897  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 535  
 atggagtttg aaaacattat ttccgcccgc gacaaggcgc gtatccttgc cgaagcactg 60  
 ccttacatcc gccggttttc cggttcgggc gccgtcatca agtatggcgg caacgcgatg 120  
 accgaacctg ccttgaaaga aggttttgcc cgcgatgtcg tgctgctgaa gctggtcggc 180  
 attcatcccg tcatcggttc cggcggcggg ccgcagatca atgcgatgct tgaaaaagtc 240  
 ggcaaaaagg gcgaatttgt ccaaggaatg cgcgttaccg acaaagagac gatggatatt 300  
 gtcgaaatgg tattgggcgg gcacgtcaac aaggaaatcg tgcgatgat taacacatat 360  
 ggagggcacg cggtcggcgt gagcgggcgc gacgaccatt tcattaaggc gaagaaactt 420  
 ttggtcgata cgcgcgaaca gaatagcgtg gacatcggac aggtcggtag ggtggaaagc 480  
 atcgataccg gtttggttaa agggctgata gaacgcggct gcattcccg cgtcgcccc 540  
 gtcggcgtag gtgaaaaagg cgaagcgttc aacatcaacg ccgatttggt ggcaggcaaa 600  
 ttggcggaaag aattgaacgc cgaaaaactc ttgatgatga cgaatatcgc cgggtgtgatg 660  
 gacaaaacgg gcaatctgct gacaaaactc acgccgaaac ggattgatgg gctgattgcc 720  
 gacggcacgc tgtatggcgg tatgctgccg aaaatcgctt ctgcggtcga agccgccgtc 780  
 aacggtgtga aagccacgca catcatcgac ggcagggttc ccaacgcgct tttgctggaa 840  
 atctttaccg atgcgggtat cgggtcgatg attttaggca gaggggaaga tgcctga 897

<210> 536  
 <211> 298

<212> PRT

<213> Neisseria gonorrhoeae

<400> 536

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Met Glu Phe Glu Asn Ile Ile Ser Ala Ala Asp Lys Ala Arg Ile Leu
  1             5             10             15

Ala Glu Ala Leu Pro Tyr Ile Arg Arg Phe Ser Gly Ser Val Ala Val
      20             25             30

Ile Lys Tyr Gly Gly Asn Ala Met Thr Glu Pro Ala Leu Lys Glu Gly
      35             40             45

Phe Ala Arg Asp Val Val Leu Leu Lys Leu Val Gly Ile His Pro Val
      50             55             60

Ile Val His Gly Gly Gly Pro Gln Ile Asn Ala Met Leu Glu Lys Val
      65             70             75             80

Gly Lys Lys Gly Glu Phe Val Gln Gly Met Arg Val Thr Asp Lys Glu
      85             90             95

Thr Met Asp Ile Val Glu Met Val Leu Gly Gly His Val Asn Lys Glu
      100            105            110

Ile Val Ser Met Ile Asn Thr Tyr Gly Gly His Ala Val Gly Val Ser
      115            120            125

Gly Arg Asp Asp His Phe Ile Lys Ala Lys Lys Leu Leu Val Asp Thr
      130            135            140

Pro Glu Gln Asn Ser Val Asp Ile Gly Gln Val Gly Thr Val Glu Ser
      145            150            155            160

Ile Asp Thr Gly Leu Val Lys Gly Leu Ile Glu Arg Gly Cys Ile Pro
      165            170            175

Val Val Ala Pro Val Gly Val Gly Glu Lys Gly Glu Ala Phe Asn Ile
      180            185            190

Asn Ala Asp Leu Val Ala Gly Lys Leu Ala Glu Glu Leu Asn Ala Glu
      195            200            205

Lys Leu Leu Met Met Thr Asn Ile Ala Gly Val Met Asp Lys Thr Gly
      210            215            220

Asn Leu Leu Thr Lys Leu Thr Pro Lys Arg Ile Asp Gly Leu Ile Ala
      225            230            235            240

Asp Gly Thr Leu Tyr Gly Gly Met Leu Pro Lys Ile Ala Ser Ala Val
      245            250            255

Glu Ala Ala Val Asn Gly Val Lys Ala Thr His Ile Ile Asp Gly Arg
      260            265            270

Leu Pro Asn Ala Leu Leu Leu Glu Ile Phe Thr Asp Ala Gly Ile Gly
      275            280            285
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Ser Met Ile Leu Gly Arg Gly Glu Asp Ala  
290 295

<210> 537  
<211> 897  
<212> DNA  
<213> Neisseria meningitidis

<400> 537  
atggagtctg aaaacattat ttccgcccgc gacaaggcgc gtatccttgc cgaagcgcgtg 60  
ccttacatcc gccggttttc cggttcggtc gccgtcatca aatacggcgg caacgcgatg 120  
accgaacctg ccttgaaaga agggtttgcc cgcgatgtcg tgctgctgaa gctggtcggc 180  
attcatcccg tcatcgttca cggcggcggg ccgcagatca atgcgatgct tgaaaaagtc 240  
ggcaaaaagg gtgagtttgt ccaaggaatg ccggttaccg acaaagaggc gatggatatt 300  
gtcgaaatgg tgttgggcgg gcatgtcaat aaagaaatcg tgtcgatgat taacacatat 360  
ggcggacacg cggtcggcgt aagcggacgc gacgaccatt tcattaaggc gaagaaactt 420  
ttgatcgata cgcccgaaca gaatggcgtg gacatcggac aggtcggtao ggtggaaagc 480  
atcgataaccg gtttggttaa agggctgata gaacgtggct gcattcccgt cgtcgccccc 540  
gtcggcgtag gtgaaaaagg cgaagcgttc aacatcaacg ccgatttggt agcaggcaaa 600  
ttggcgggaag aattgaacgc cgaaaaactc ttgatgatga cgaatatcgc cgggtgtgatg 660  
gacaaaacgg gcaatctgct gaccaaactc acgccgaaac ggattgatga actgattgcc 720  
gacggcacgc tgtatggcgg tatgctgccg aaaatcgctt ctgcggtcga agccgccgtc 780  
aacggtgtga aagccacgca tatcatcgac ggcaggttgc ccaacgcgct tttgctggaa 840  
atctttaccg atgccggtat cggttcgtat attttgggcg gtggggaaga tgcctga 897

<210> 538  
<211> 298  
<212> PRT  
<213> Neisseria meningitidis

<400> 538  
Met Glu Ser Glu Asn Ile Ile Ser Ala Ala Asp Lys Ala Arg Ile Leu  
1 5 10 15  
Ala Glu Ala Leu Pro Tyr Ile Arg Arg Phe Ser Gly Ser Val Ala Val  
20 25 30  
Ile Lys Tyr Gly Gly Asn Ala Met Thr Glu Pro Ala Leu Lys Glu Gly  
35 40 45  
Phe Ala Arg Asp Val Val Leu Leu Lys Leu Val Gly Ile His Pro Val  
50 55 60  
Ile Val His Gly Gly Gly Pro Gln Ile Asn Ala Met Leu Glu Lys Val  
65 70 75 80  
Gly Lys Lys Gly Glu Phe Val Gln Gly Met Arg Val Thr Asp Lys Glu  
85 90 95  
Ala Met Asp Ile Val Glu Met Val Leu Gly Gly His Val Asn Lys Glu  
100 105 110  
Ile Val Ser Met Ile Asn Thr Tyr Gly Gly His Ala Val Gly Val Ser  
115 120 125



Gly Arg Asp Asp His Phe Ile Lys Ala Lys Lys Leu Leu Ile Asp Thr  
 130 135 140  
 Pro Glu Gln Asn Gly Val Asp Ile Gly Gln Val Gly Thr Val Glu Ser  
 145 150 155 160  
 Ile Asp Thr Gly Leu Val Lys Gly Leu Ile Glu Arg Gly Cys Ile Pro  
 165 170 175  
 Val Val Ala Pro Val Gly Val Gly Glu Lys Gly Glu Ala Phe Asn Ile  
 180 185 190  
 Asn Ala Asp Leu Val Ala Gly Lys Leu Ala Glu Glu Leu Asn Ala Glu  
 195 200 205  
 Lys Leu Leu Met Met Thr Asn Ile Ala Gly Val Met Asp Lys Thr Gly  
 210 215 220  
 Asn Leu Leu Thr Lys Leu Thr Pro Lys Arg Ile Asp Glu Leu Ile Ala  
 225 230 235 240  
 Asp Gly Thr Leu Tyr Gly Gly Met Leu Pro Lys Ile Ala Ser Ala Val  
 245 250 255  
 Glu Ala Ala Val Asn Gly Val Lys Ala Thr His Ile Ile Asp Gly Arg  
 260 265 270  
 Leu Pro Asn Ala Leu Leu Leu Glu Ile Phe Thr Asp Ala Gly Ile Gly  
 275 280 285  
 Ser Met Ile Leu Gly Gly Gly Glu Asp Ala  
 290 295

<210> 539  
 <211> 897  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 539  
 atggagtctg aaaacattat ttccgccgcc gacaaggcgc gtatccttgc cgaagcgtg 60  
 ccttacatcc gccggttttc cggttcggtc gccgtcatca aatacggcgg caacgcgatg 120  
 accgaacctg ccttgaaaga agggtttgcc cgcgatgtcg tgctgctgaa gctggtcggc 180  
 attcatcccc tcatcgttca cggcggcggg ccgcagatca atgcgatgct tgaaaaagtc 240  
 ggcaaaaagg gtgagtttgt ccaaggaatg cgcgttaccg acaaagaggc gatggatatt 300  
 gtcgaaatgg tgttgggcgg gcatgtcaat aaagaaatcg tgtcgatgat taacacatat 360  
 ggcggacacg cggtcggcgt aagcggacgc gacgaccatt tcattaaggc gaagaaactt 420  
 ttgatcgata cgcccgaaca gaatggcgtg gacatcggac aggtcggtag ggtggaaagc 480  
 atcgataccg gtttggttaa agggctgata gaacgtggct gcattcccgt cgtcgcccc 540  
 gtcggcgtag gtgaaaaagg cgaagcgttc aacatcaacg ccgatttggg agcaggcaaa 600  
 ttggcggaag aattgaacgc cgaaaaactc ttgatgatga cgaatatcgc cgggtgtgatg 660  
 gacaaaacgg gcaatctgct gaccaaactc acgccgaaac ggattgatga actgattgcc 720  
 gacggcacgc tgtatggcgg tatgctgccg aaaatcgctt ctgcggtcga agccgcgcgc 780  
 aacggcgtga aagccacgca tatcatcgac ggcagggtgc ccaacgcgct tttgctggaa 840  
 atctttaccg atgccggtat cggttcgatg attttgggcg gtggggaaga tgcctga 897

<210> 540  
<211> 298  
<212> PRT  
<213> Neisseria meningitidis

<400> 540

Met Glu Ser Glu Asn Ile Ile Ser Ala Ala Asp Lys Ala Arg Ile Leu  
1 5 10 15

Ala Glu Ala Leu Pro Tyr Ile Arg Arg Phe Ser Gly Ser Val Ala Val  
20 25 30

Ile Lys Tyr Gly Gly Asn Ala Met Thr Glu Pro Ala Leu Lys Glu Gly  
35 40 45

Phe Ala Arg Asp Val Val Leu Leu Lys Leu Val Gly Ile His Pro Val  
50 55 60

Ile Val His Gly Gly Gly Pro Gln Ile Asn Ala Met Leu Glu Lys Val  
65 70 75 80

Gly Lys Lys Gly Glu Phe Val Gln Gly Met Arg Val Thr Asp Lys Glu  
85 90 95

Ala Met Asp Ile Val Glu Met Val Leu Gly Gly His Val Asn Lys Glu  
100 105 110

Ile Val Ser Met Ile Asn Thr Tyr Gly Gly His Ala Val Gly Val Ser  
115 120 125

Gly Arg Asp Asp His Phe Ile Lys Ala Lys Lys Leu Leu Ile Asp Thr  
130 135 140

Pro Glu Gln Asn Gly Val Asp Ile Gly Gln Val Gly Thr Val Glu Ser  
145 150 155 160

Ile Asp Thr Gly Leu Val Lys Gly Leu Ile Glu Arg Gly Cys Ile Pro  
165 170 175

Val Val Ala Pro Val Gly Val Gly Glu Lys Gly Glu Ala Phe Asn Ile  
180 185 190

Asn Ala Asp Leu Val Ala Gly Lys Leu Ala Glu Glu Leu Asn Ala Glu  
195 200 205

Lys Leu Leu Met Met Thr Asn Ile Ala Gly Val Met Asp Lys Thr Gly  
210 215 220

Asn Leu Leu Thr Lys Leu Thr Pro Lys Arg Ile Asp Glu Leu Ile Ala  
225 230 235 240

Asp Gly Thr Leu Tyr Gly Gly Met Leu Pro Lys Ile Ala Ser Ala Val  
245 250 255

Glu Ala Ala Val Asn Gly Val Lys Ala Thr His Ile Ile Asp Gly Arg

260

265

270

Val Pro Asn Ala Leu Leu Leu Glu Ile Phe Thr Asp Ala Gly Ile Gly  
 275 280 285

Ser Met Ile Leu Gly Gly Gly Glu Asp Ala  
 290 295

&lt;210&gt; 541

&lt;211&gt; 537

&lt;212&gt; DNA

<213> *Neisseria gonorrhoeae*

&lt;400&gt; 541

atgcgaacca cctcaacctt ccctacaaaa actttcaaac cggctgccat ggcgtagct 60  
 gttgcaacaa cactttctgc ctgcttaggc ggcggcggag gcggcacttc tgctcccgac 120  
 tttaatgcag gcggcaccgg tatcggcagc aacagcagg caacgatagc ggaatcagca 180  
 gcagtatctt acgccggtat aaaaaacgaa atgtgcaaag acagaagcat gctctgtgcc 240  
 ggtcgggatg acgttgcggt tacagacagg gatgccaaaa tcaaagcccc ccgaatctgc 300  
 ataccggaga cttttcaaac ccaaatgacc aatattaaga atatgatcaa cctcaaacct 360  
 gcaattgaag caggctatac aggacgcggg gtagaggtag gtatcgctga tacaggcgaa 420  
 tccgtcggca gcatatcctt tcccgaactg tatggcagaa aagaacacgg ctataacgaa 480  
 aattacaaaa acaaattaca aaaactatac ggcgtatatg cggaaggaag cgctga 537

&lt;210&gt; 542

&lt;211&gt; 178

&lt;212&gt; PRT

<213> *Neisseria gonorrhoeae*

&lt;400&gt; 542

Met Arg Thr Thr Ser Thr Phe Pro Thr Lys Thr Phe Lys Pro Ala Ala  
 1 5 10 15

Met Ala Leu Ala Val Ala Thr Thr Leu Ser Ala Cys Leu Gly Gly Gly  
 20 25 30

Gly Gly Gly Thr Ser Ala Pro Asp Phe Asn Ala Gly Gly Thr Gly Ile  
 35 40 45

Gly Ser Asn Ser Arg Ala Thr Ile Ala Glu Ser Ala Ala Val Ser Tyr  
 50 55 60

Ala Gly Ile Lys Asn Glu Met Cys Lys Asp Arg Ser Met Leu Cys Ala  
 65 70 75 80

Gly Arg Asp Asp Val Ala Val Thr Asp Arg Asp Ala Lys Ile Lys Ala  
 85 90 95

Pro Arg Ile Cys Ile Pro Glu Thr Phe Gln Thr Gln Met Thr Asn Ile  
 100 105 110

Lys Asn Met Ile Asn Leu Lys Pro Ala Ile Glu Ala Gly Tyr Thr Gly  
 115 120 125

Arg Gly Val Glu Val Gly Ile Val Asp Thr Gly Glu Ser Val Gly Ser

130	135	140
Ile Ser Phe Pro Glu Leu Tyr Gly Arg Lys Glu His Gly Tyr Asn Glu		
145	150	155 160
Asn Tyr Lys Asn Lys Leu Gln Lys Leu Tyr Gly Val Tyr Ala Glu Gly		
	165	170 175

Ser Ala

<210> 543  
 <211> 528  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 543  
 atgcgaacga ccccaacctt ccctacaaaa actttcaaac cgactgccat ggcggttagct 60  
 gttgcaacaa cactttctgc ctgcttaggc ggcggcggag gcggcacttc tgcgcccagac 120  
 ttcaatgcag gcggtaccgg tatcggcagc aacagcagag caacaacagc gaaatcagca 180  
 gcagtatctt acgccggtat caagaacgaa atgtgcaaag acagaagcat gctctgtgcc 240  
 ggtcgggatg acgttgcggt tacagacagg gatgccaaaa tcaatgcccc cccccgaatc 300  
 tgcataccgg agactttcca aaccctaaatg acgcattaca agaatttgat caacctcaaa 360  
 cctgcaattg aagcaggcta tacaggacgc ggggtagagg taggtatcgt cgacacaggc 420  
 gaatccgtcg gcagcatatc ctttcccga a ctgtatggca gaaaagaaca cggctataac 480  
 gaaaattacg aaaaactata cggcgtatat gcggaaggaa gcgcctga 528

<210> 544  
 <211> 175  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 544  
 Met Arg Thr Thr Pro Thr Phe Pro Thr Lys Thr Phe Lys Pro Thr Ala  
 1 5 10 15  
 Met Ala Leu Ala Val Ala Thr Thr Leu Ser Ala Cys Leu Gly Gly Gly  
 20 25 30  
 Gly Gly Gly Thr Ser Ala Pro Asp Phe Asn Ala Gly Gly Thr Gly Ile  
 35 40 45  
 Gly Ser Asn Ser Arg Ala Thr Thr Ala Lys Ser Ala Ala Val Ser Tyr  
 50 55 60  
 Ala Gly Ile Lys Asn Glu Met Cys Lys Asp Arg Ser Met Leu Cys Ala  
 65 70 75 80  
 Gly Arg Asp Asp Val Ala Val Thr Asp Arg Asp Ala Lys Ile Asn Ala  
 85 90 95  
 Pro Pro Arg Ile Cys Ile Pro Glu Thr Phe Gln Thr Gln Met Thr His  
 100 105 110  
 Tyr Lys Asn Leu Ile Asn Leu Lys Pro Ala Ile Glu Ala Gly Tyr Thr

115	120	125
Gly Arg Gly Val Glu Val	Gly Ile Val Asp Thr	Gly Glu Ser Val Gly
130	135	140
Ser Ile Ser Phe Pro Glu Leu Tyr Gly Arg Lys Glu His Gly Tyr Asn		
145	150	155 160
Glu Asn Tyr Glu Lys Leu Tyr Gly Val Tyr Ala Glu Gly Ser Ala		
	165 170	175

<210> 545  
 <211> 526  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 545  
 atgcgaacga ccccaacctt ccctacaaaa actttcaaac cggctgccat ggcgttagct 60  
 gttgcaacaa cactttctgc ctgcttaggc ggcggcggag gcggcacttc tgcgcccgcac 120  
 ttcaatgcag gcggcaccgg tatcggcagc aacagcaggg caacaacagc gaaatcagca 180  
 gcaatatctt acgccggtat caagaacgaa atgtgcaaag acagaagcat gctctgtgcc 240  
 ggtcgggatg acgttgcggt tacagacagg gatgccaaaa tcaatgcccc cccccgaatc 300  
 tgcataccgg agactttaca aaccctaaatg acgcatacaa gaatttgatc aacctcaaac 360  
 ctgcaattga agcaggctat acaggacgcg gggtagaggt aggtatcgtc gacacaggcg 420  
 aatccgtcgg cagcatatcc tttcccgaac tgtatggcag aaaagaacac ggctataacg 480  
 aaaattacaa aaactatacg gcgtatatgc ggaaggaagc gcctga 526

<210> 546  
 <211> 175  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 546  
 Met Arg Thr Thr Pro Thr Phe Pro Thr Lys Thr Phe Lys Pro Ala Ala  
 1 5 10 15  
 Met Ala Leu Ala Val Ala Thr Thr Leu Ser Ala Cys Leu Gly Gly Gly  
 20 25 30  
 Gly Gly Gly Thr Ser Ala Pro Asp Phe Asn Ala Gly Gly Thr Gly Ile  
 35 40 45  
 Gly Ser Asn Ser Arg Ala Thr Thr Ala Lys Ser Ala Ala Ile Ser Tyr  
 50 55 60  
 Ala Gly Ile Lys Asn Glu Met Cys Lys Asp Arg Ser Met Leu Cys Ala  
 65 70 75 80  
 Gly Arg Asp Asp Val Ala Val Thr Asp Arg Asp Ala Lys Ile Asn Ala  
 85 90 95  
 Pro Pro Arg Ile Cys Ile Pro Glu Thr Leu Gln Thr Gln Met Thr His  
 100 105 110  
 Xaa Lys Asn Leu Ile Asn Leu Lys Pro Ala Ile Glu Ala Gly Tyr Thr

115	120	125
Gly Arg Gly Val Glu Val	Gly Ile Val Asp Thr	Gly Glu Ser Val Gly
130	135	140
Ser Ile Ser Phe Pro Glu Leu Tyr Gly Arg Lys Glu His Gly Tyr Asn		
145	150	155 160
Glu Asn Tyr Xaa Lys Leu Tyr Gly Val Tyr Ala Glu Gly Ser Ala		
	165 170	175

<210> 547  
 <211> 1365  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 547  
 atgtcggcac ggcgcaaggg ggcaggctat ctcaacagta ccggacgaca tgttcccttc 60  
 ctgagtgcgc ccaaaatcgg gcaggattat tctttcttca aaaatatcaa aaccgacggc 120  
 ggtctgctgg cttccctcga cagcgtcgaa aaaacagcgg gcagtgaagg cgacacgccg 180  
 tcctattatg tccgtcgcgg caatgcggca cggactgctt cggcagcggc acattccgcg 240  
 cccgccggtc tgaaacacgc cgtagaacag ggcggcagca atctggaaaa cctgatggtc 300  
 gagctggatg cctccgaatc atccgcaaca cccgagacgg ttgaaactgc ggtcgcgcgac 360  
 cgcacagata tgccgggcat ccgcctacgg cgcacaactt tccgcacagc ggcagccgta 420  
 cagcatgcga ataccgccga cggcgtagcg atcttcaaca gtctcgccgc taccgtctat 480  
 gccgacagtg ccgccgccca tgccgatatg cagggacgcc gcctgaaagc cgtatcggac 540  
 gggttggacc acaacgggtac gggctctgcgc gtcctcgccg aaacccaaca ggacggtgga 600  
 acgtgggaac agggcggtgt cgaaggcaaa atgcgcggca gtacccaacac tatcggcatt 660  
 gccgcgaaaa ccggcgaaaa tacgacagca gccgccacac tgggcatagg acgcagcaca 720  
 tggagcgaaa acagtgcaaa tgcaaaaacc gacagcatta gtctgtttgc aggcatacgg 780  
 cacgatgtgg gcgatatcgg ctatctcaaa ggcctgttct cctacggacg ctacaaaaac 840  
 agcatcagcc gcagcaccgg tgcggatgaa tatgcggaag gcagcgtcaa cggcacgctg 900  
 atgcagctgg gcgcactggg tgggtgtcaac gttccgtttg ccgcaacggg agatttgacg 960  
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 gctttgggct ggagcggcaa cagcctcact gaaggeacac tggtcggact cgcgggtctg 1080  
 aaactgtcgc aacccttgag cgataaagcc gtctgtctg cgacggcggg cgtggaacgc 1140  
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 ggcaagacgg gtgcacgcaa tatgccgcac accgcgcggg ttgccggtct ggggggtgat 1260  
 gtcgaattcg gcaacggctg gaacggcttg gcacgttaca gctacaccgg ttccaaacag 1320  
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<210> 548  
 <211> 454  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 548  
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 Phe Lys Asn Ile Lys Thr Asp Gly Gly Leu Leu Ala Ser Leu Asp Ser  
 35 40 45

Val	Glu	Lys	Thr	Ala	Gly	Ser	Glu	Gly	Asp	Thr	Pro	Ser	Tyr	Tyr	Val	50	55	60	
Arg	Arg	Gly	Asn	Ala	Ala	Arg	Thr	Ala	Ser	Ala	Ala	Ala	His	Ser	Ala	65	70	75	80
Pro	Ala	Gly	Leu	Lys	His	Ala	Val	Glu	Gln	Gly	Gly	Ser	Asn	Leu	Glu	85	90	95	
Asn	Leu	Met	Val	Glu	Leu	Asp	Ala	Ser	Glu	Ser	Ser	Ala	Thr	Pro	Glu	100	105	110	
Thr	Val	Glu	Thr	Ala	Val	Ala	Asp	Arg	Thr	Asp	Met	Pro	Gly	Ile	Arg	115	120	125	
Leu	Arg	Arg	Thr	Thr	Phe	Arg	Thr	Ala	Ala	Ala	Val	Gln	His	Ala	Asn	130	135	140	
Thr	Ala	Asp	Gly	Val	Arg	Ile	Phe	Asn	Ser	Leu	Ala	Ala	Thr	Val	Tyr	145	150	155	160
Ala	Asp	Ser	Ala	Ala	Ala	His	Ala	Asp	Met	Gln	Gly	Arg	Arg	Leu	Lys	165	170	175	
Ala	Val	Ser	Asp	Gly	Leu	Asp	His	Asn	Gly	Thr	Gly	Leu	Arg	Val	Ile	180	185	190	
Ala	Gln	Thr	Gln	Gln	Asp	Gly	Gly	Thr	Trp	Glu	Gln	Gly	Gly	Val	Glu	195	200	205	
Gly	Lys	Met	Arg	Gly	Ser	Thr	Gln	Thr	Ile	Gly	Ile	Ala	Ala	Lys	Thr	210	215	220	
Gly	Glu	Asn	Thr	Thr	Ala	Ala	Ala	Thr	Leu	Gly	Ile	Gly	Arg	Ser	Thr	225	230	235	240
Trp	Ser	Glu	Asn	Ser	Ala	Asn	Ala	Lys	Thr	Asp	Ser	Ile	Ser	Leu	Phe	245	250	255	
Ala	Gly	Ile	Arg	His	Asp	Val	Gly	Asp	Ile	Gly	Tyr	Leu	Lys	Gly	Leu	260	265	270	
Phe	Ser	Tyr	Gly	Arg	Tyr	Lys	Asn	Ser	Ile	Ser	Arg	Ser	Thr	Gly	Ala	275	280	285	
Asp	Glu	Tyr	Ala	Glu	Gly	Ser	Val	Asn	Gly	Thr	Leu	Met	Gln	Leu	Gly	290	295	300	
Ala	Leu	Gly	Gly	Val	Asn	Val	Pro	Phe	Ala	Ala	Thr	Gly	Asp	Leu	Thr	305	310	315	320
Val	Glu	Gly	Gly	Leu	Arg	His	Asp	Leu	Leu	Lys	Gln	Asp	Ala	Phe	Ala	325	330	335	
Glu	Lys	Gly	Ser	Ala	Leu	Gly	Trp	Ser	Gly	Asn	Ser	Leu	Thr	Glu	Gly	340	345	350	

Thr Leu Val Gly Leu Ala Gly Leu Lys Leu Ser Gln Pro Leu Ser Asp  
 355 360 365  
 Lys Ala Val Leu Ser Ala Thr Ala Gly Val Glu Arg Asp Leu Asn Gly  
 370 375 380  
 Arg Asp Tyr Ala Val Thr Gly Gly Phe Thr Gly Ala Ala Ala Ala Thr  
 385 390 395 400  
 Gly Lys Thr Gly Ala Arg Asn Met Pro His Thr Arg Arg Val Ala Gly  
 405 410 415  
 Leu Gly Val Asp Val Glu Phe Gly Asn Gly Trp Asn Gly Leu Ala Arg  
 420 425 430  
 Tyr Ser Tyr Thr Gly Ser Lys Gln Tyr Gly Asn His Ser Gly Gln Ile  
 435 440 445  
 Gly Val Gly Tyr Arg Phe  
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<210> 549  
 <211> 1365  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 549  
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 ggctgtctgg cttccctcga cagcgtcgaa aaaacagcgg gcagtgaagg cgacacgctg 180  
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 cccgccggtc tgaaacacgc cgtagaacag ggcggcagca atctggaaaa cctgatggtc 300  
 gaactggatg cctccgaatc atccgcaaca cccgagacgg ttgaaactgc ggacgccgac 360  
 cgcacagata tgccgggcat ccgcccctac ggcgcaactt tccgcgcagc ggacgccgta 420  
 cagcatgcga atgccgccga cgggtgtacgc atcttcaaca gtctcgccgc taccgtctat 480  
 gccgacagta ccgccgccca tgccgatatg cagggacgcc gcctgaaagc cgtatcggac 540  
 gggttggacc acaacggcac ggggtctgcgc gtcacgcgc aaacccaaca ggacggtgga 600  
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 gccgcgaaaa ccggcgaaaa tacgacagca gccgccacac tgggcatggg acgcagcaca 720  
 tggagcgaaa acagtgcaaa tgcaaaaacc gacagcatta gtctgtttgc aggcatacgg 780  
 cacgatgcgg gcgatatcgg ctatctcaaa ggctgttct cctacggacg ctacaaaaac 840  
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 gtcgaaggcg gtctgcgcta cgacctgctc aaacaggatg cattcgccga aaaaggcagt 1020  
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 aagctgtcgc aacccttgag cgataaagcc gtcctgtttg caacggcggg cgtggaacgc 1140  
 gacctgaacg gacgcgacta cacggtaacg ggcggttta ccggcgcgac tgcagcaacc 1200  
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 gtcgaattcg gcaacggctg gaacggcttg gcacgttaca gctacgccg ttccaaacag 1320  
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<210> 550  
 <211> 454  
 <212> PRT



<213> Neisseria meningitidis

<400> 550

Met	Ser	Ala	Arg	Gly	Lys	Gly	Ala	Gly	Tyr	Leu	Asn	Ser	Thr	Gly	Arg	
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Arg	Val	Pro	Phe	Leu	Ser	Ala	Ala	Lys	Ile	Gly	Gln	Asp	Tyr	Ser	Phe	
			20					25					30			
Phe	Thr	Asn	Ile	Glu	Thr	Asp	Gly	Gly	Leu	Leu	Ala	Ser	Leu	Asp	Ser	
		35					40					45				
Val	Glu	Lys	Thr	Ala	Gly	Ser	Glu	Gly	Asp	Thr	Leu	Ser	Tyr	Tyr	Val	
	50					55					60					
Arg	Arg	Gly	Asn	Ala	Ala	Arg	Thr	Ala	Ser	Ala	Ala	Ala	His	Ser	Ala	
65					70					75					80	
Pro	Ala	Gly	Leu	Lys	His	Ala	Val	Glu	Gln	Gly	Gly	Ser	Asn	Leu	Glu	
				85					90					95		
Asn	Leu	Met	Val	Glu	Leu	Asp	Ala	Ser	Glu	Ser	Ser	Ala	Thr	Pro	Glu	
			100						105				110			
Thr	Val	Glu	Thr	Ala	Ala	Ala	Asp	Arg	Thr	Asp	Met	Pro	Gly	Ile	Arg	
		115					120					125				
Pro	Tyr	Gly	Ala	Thr	Phe	Arg	Ala	Ala	Ala	Ala	Val	Gln	His	Ala	Asn	
	130					135						140				
Ala	Ala	Asp	Gly	Val	Arg	Ile	Phe	Asn	Ser	Leu	Ala	Ala	Thr	Val	Tyr	
145					150					155					160	
Ala	Asp	Ser	Thr	Ala	Ala	His	Ala	Asp	Met	Gln	Gly	Arg	Arg	Leu	Lys	
				165					170					175		
Ala	Val	Ser	Asp	Gly	Leu	Asp	His	Asn	Gly	Thr	Gly	Leu	Arg	Val	Ile	
			180					185					190			
Ala	Gln	Thr	Gln	Gln	Asp	Gly	Gly	Thr	Trp	Glu	Gln	Gly	Gly	Val	Glu	
		195					200					205				
Gly	Lys	Met	Arg	Gly	Ser	Thr	Gln	Thr	Val	Gly	Ile	Ala	Ala	Lys	Thr	
	210					215					220					
Gly	Glu	Asn	Thr	Thr	Ala	Ala	Ala	Thr	Leu	Gly	Met	Gly	Arg	Ser	Thr	
225					230					235					240	
Trp	Ser	Glu	Asn	Ser	Ala	Asn	Ala	Lys	Thr	Asp	Ser	Ile	Ser	Leu	Phe	
				245					250					255		
Ala	Gly	Ile	Arg	His	Asp	Ala	Gly	Asp	Ile	Gly	Tyr	Leu	Lys	Gly	Leu	
			260					265					270			
Phe	Ser	Tyr	Gly	Arg	Tyr	Lys	Asn	Ser	Ile	Ser	Arg	Ser	Thr	Gly	Ala	
		275					280					285				

Asp Glu His Ala Glu Gly Ser Val Asn Gly Thr Leu Met Gln Leu Gly  
 290 295 300  
 Ala Leu Gly Gly Val Asn Val Pro Phe Ala Ala Thr Gly Asp Leu Thr  
 305 310 315 320  
 Val Glu Gly Gly Leu Arg Tyr Asp Leu Leu Lys Gln Asp Ala Phe Ala  
 325 330 335  
 Glu Lys Gly Ser Ala Leu Gly Trp Ser Gly Asn Ser Leu Thr Glu Gly  
 340 345 350  
 Thr Leu Val Gly Leu Ala Gly Leu Lys Leu Ser Gln Pro Leu Ser Asp  
 355 360 365  
 Lys Ala Val Leu Phe Ala Thr Ala Gly Val Glu Arg Asp Leu Asn Gly  
 370 375 380  
 Arg Asp Tyr Thr Val Thr Gly Gly Phe Thr Gly Ala Thr Ala Ala Thr  
 385 390 395 400  
 Gly Lys Thr Gly Ala Arg Asn Met Pro His Thr Arg Leu Val Ala Gly  
 405 410 415  
 Leu Gly Ala Asp Val Glu Phe Gly Asn Gly Trp Asn Gly Leu Ala Arg  
 420 425 430  
 Tyr Ser Tyr Ala Gly Ser Lys Gln Tyr Gly Asn His Ser Gly Arg Val  
 435 440 445  
 Gly Val Gly Tyr Arg Phe  
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<210> 551  
 <211> 1365  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 551  
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 cgcacagata tgccgggcat ccgcccctac ggcgcaactt tccgcgcagc ggcagccgta 420  
 cagcatgcga atgccgccga cgggtgtacgc atcttcaaca atctcgcgcg taccgtctat 480  
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 gccgcgaaaa ccggcgaaaa tacgacagca gccgccacac tgggcatggg acacagcaca 720  
 tggagcgaaa acagtgcaaa tgcaaaaacc gacagcatta gtctgtttgc aggcatagcg 780  
 cagcatgcgg gcgatatcgg ctatctcaaa ggcctgttct cctacggacg ctacaaaaac 840  
 agcatcagcc gcagcaccgg tcgcgacgaa catgcggaag gcagcgtcaa cggcacgctg 900  
 atgcagctgg gcgcactggg cgggtgtcaac gttccgtttg ccgcaacggg agatttgacg 960  
 gtcgaaggcg gtctgcgcta cgacctgctc aaacaggatg cattcgccga aaaaggcagt 1020

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gacctgaacg gacgcgacta cacggtaacg ggcggtttta ccggcgcgac tgcagcaacc 1200
ggcaagacgg gggcacgcaa tatgccgcac accgcctgg ttgccggtct gggcgcggat 1260
gtcgaattcg gcaacggctg gaacggcttg gcacgttaca gctacgccg ttccaaacag 1320
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<210> 552

<211> 454

<212> PRT

<213> Neisseria meningitidis

<400> 552

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Met Ser Ala Gly Gly Lys Gly Ala Gly Tyr Leu Asn Arg Thr Gly Gln
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          20             25             30

Phe Thr Asn Ile Glu Thr Asp Gly Gly Leu Leu Ala Ser Leu Asp Ser
      35             40             45

Val Glu Lys Thr Ala Gly Ser Glu Gly Asp Thr Leu Ser Tyr Tyr Val
      50             55             60

Arg Arg Gly Asn Ala Ala Arg Thr Ala Ser Ala Ala Ala His Ser Ala
      65             70             75             80

Pro Ala Gly Leu Lys His Ala Val Glu Gln Gly Gly Ser Asn Leu Glu
          85             90             95

Asn Leu Met Val Glu Leu Asp Ala Ser Glu Ser Ser Ala Thr Pro Glu
      100             105             110

Thr Val Glu Thr Ala Ala Ala Asp Arg Thr Asp Met Pro Gly Ile Arg
      115             120             125

Pro Tyr Gly Ala Thr Phe Arg Ala Ala Ala Ala Val Gln His Ala Asn
      130             135             140

Ala Ala Asp Gly Val Arg Ile Phe Asn Asn Leu Ala Ala Thr Val Tyr
      145             150             155             160

Ala Asp Ser Thr Ala Ala His Ala Asp Met Gln Gly Arg Arg Leu Lys
          165             170             175

Ala Val Ser Asp Gly Leu Asp His Asn Ala Thr Gly Leu Arg Val Ile
          180             185             190

Ala Gln Thr Gln Gln Asp Gly Gly Thr Trp Glu Gln Gly Gly Val Glu
      195             200             205

Gly Lys Met Arg Gly Ser Thr Gln Thr Val Gly Ile Ala Ala Lys Thr
      210             215             220

Gly Glu Asn Thr Thr Ala Ala Ala Thr Leu Gly Met Gly His Ser Thr

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225		230		235		240
Trp Ser Glu Asn Ser Ala Asn Ala Lys Thr Asp Ser Ile Ser Leu Phe						
	245			250		255
Ala Gly Ile Arg His Asp Ala Gly Asp Ile Gly Tyr Leu Lys Gly Leu						
	260			265		270
Phe Ser Tyr Gly Arg Tyr Lys Asn Ser Ile Ser Arg Ser Thr Gly Ala						
	275			280		285
Asp Glu His Ala Glu Gly Ser Val Asn Gly Thr Leu Met Gln Leu Gly						
	290			295		300
Ala Leu Gly Gly Val Asn Val Pro Phe Ala Ala Thr Gly Asp Leu Thr						
	305			310		315
Val Glu Gly Gly Leu Arg Tyr Asp Leu Leu Lys Gln Asp Ala Phe Ala						
	325			330		335
Glu Lys Gly Ser Ala Leu Gly Trp Ser Gly Asn Ser Ile Thr Glu Gly						
	340			345		350
Thr Leu Val Gly Leu Ala Gly Leu Lys Leu Ser Gln Pro Leu Ser Asp						
	355			360		365
Lys Ala Val Leu Phe Ala Thr Ala Gly Val Glu Arg Asp Leu Asn Gly						
	370			375		380
Arg Asp Tyr Thr Val Thr Gly Gly Phe Thr Gly Ala Thr Ala Ala Thr						
	385			390		395
Gly Lys Thr Gly Ala Arg Asn Met Pro His Thr Arg Leu Val Ala Gly						
	405			410		415
Leu Gly Ala Asp Val Glu Phe Gly Asn Gly Trp Asn Gly Leu Ala Arg						
	420			425		430
Tyr Ser Tyr Ala Gly Ser Lys Gln Tyr Gly Asn His Ser Gly Arg Val						
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Gly Val Gly Tyr Arg Phe						
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<210> 553  
 <211> 1677  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 553  
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 aaaatcaatc ctgccgaagc gttcaagctg ccgcaaaaac aaggcaggct gattttggtt 180  
 accgccatca acccgactcc ggcgggcgaa ggcaaaacca ccgtaaccat cggtttggcg 240  
 gacgcattgc gccatatcgg caaagactct gtgattgctt tgcgcgagcc ttctttgggt 300  
 ccggtgttcg gcgtgaaagg cggcgcggca ggcggcggct acgcgcaagt tttgccgatg 360

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gaagacatca acctgcactt caccggcgac ttccacgcca tcggtgcggc gaataacctc 420
ctcgccgcca tgctcgacaa ccatatctac caaggtaacg agttgaacat cgaccccaaa 480
cgcgctgctgt ggcggcgcggt ggtcgatatg aacgaccgcc agttgcgcaa catcatcgac 540
ggtatgggca agcctgttga cggcgtgatg cgtcccgcag gcttcgacat caccgtcgcc 600
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<210> 554

<211> 558

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 554

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Met Ser Phe Lys Thr Asp Ala Glu Thr Ala Gln Ser Ser Thr Met Arg
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          20                      25                      30

Glu Pro Tyr Gly His Tyr Lys Ala Lys Ile Asn Pro Ala Glu Ala Phe
          35                      40                      45

Lys Leu Pro Gln Lys Gln Gly Arg Leu Ile Leu Val Thr Ala Ile Asn
          50                      55                      60

Pro Thr Pro Ala Gly Glu Gly Lys Thr Thr Val Thr Ile Gly Leu Ala
          65                      70                      75                      80

Asp Ala Leu Arg His Ile Gly Lys Asp Ser Val Ile Ala Leu Arg Glu
          85                      90                      95

Pro Ser Leu Gly Pro Val Phe Gly Val Lys Gly Gly Ala Ala Gly Gly
          100                      105                      110

Gly Tyr Ala Gln Val Leu Pro Met Glu Asp Ile Asn Leu His Phe Thr
          115                      120                      125

Gly Asp Phe His Ala Ile Gly Ala Ala Asn Asn Leu Leu Ala Ala Met
          130                      135                      140

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Leu	Asp	Asn	His	Ile	Tyr	Gln	Gly	Asn	Glu	Leu	Asn	Ile	Asp	Pro	Lys	145	150	155	160
Arg	Val	Leu	Trp	Arg	Arg	Val	Val	Asp	Met	Asn	Asp	Arg	Gln	Leu	Arg	165	170	175	
Asn	Ile	Ile	Asp	Gly	Met	Gly	Lys	Pro	Val	Asp	Gly	Val	Met	Arg	Pro	180	185	190	
Asp	Gly	Phe	Asp	Ile	Thr	Val	Ala	Ser	Glu	Val	Met	Ala	Val	Phe	Cys	195	200	205	
Leu	Ala	Lys	Asp	Ile	Ser	Asp	Leu	Lys	Glu	Arg	Phe	Gly	Asn	Ile	Leu	210	215	220	
Val	Ala	Tyr	Ala	Lys	Asp	Gly	Ser	Pro	Val	Tyr	Ala	Lys	Asp	Leu	Lys	225	230	235	240
Ala	His	Gly	Ala	Met	Ala	Ala	Leu	Leu	Lys	Asp	Ala	Ile	Lys	Pro	Asn	245	250	255	
Leu	Val	Gln	Thr	Ile	Glu	Gly	Thr	Pro	Ala	Phe	Val	His	Gly	Gly	Pro	260	265	270	
Phe	Ala	Asn	Ile	Ala	His	Gly	Cys	Asn	Ser	Val	Thr	Ala	Thr	Arg	Leu	275	280	285	
Ala	Lys	His	Leu	Ala	Asp	Tyr	Ala	Val	Thr	Glu	Ala	Gly	Phe	Gly	Ala	290	295	300	
Asp	Leu	Gly	Ala	Glu	Lys	Phe	Cys	Asp	Ile	Lys	Cys	Arg	Leu	Ala	Gly	305	310	315	320
Leu	Lys	Pro	Asp	Ala	Ala	Val	Val	Val	Ala	Thr	Val	Arg	Ala	Leu	Lys	325	330	335	
Tyr	Asn	Gly	Gly	Val	Glu	Arg	Ala	Asn	Leu	Gly	Glu	Glu	Asn	Leu	Glu	340	345	350	
Ala	Leu	Ala	Lys	Gly	Leu	Pro	Asn	Leu	Leu	Lys	His	Ile	Ser	Asn	Leu	355	360	365	
Lys	Asn	Val	Phe	Gly	Leu	Pro	Val	Val	Val	Ala	Leu	Asn	Arg	Phe	Val	370	375	380	
Ser	Asp	Ser	Asp	Ala	Glu	Leu	Ala	Met	Ile	Glu	Lys	Ala	Cys	Ala	Glu	385	390	395	400
His	Gly	Val	Glu	Val	Ser	Leu	Thr	Glu	Val	Trp	Gly	Lys	Gly	Gly	Ala	405	410	415	
Gly	Gly	Ala	Asp	Leu	Ala	Arg	Lys	Val	Val	Asn	Ala	Ile	Asp	Asn	Gln	420	425	430	
Pro	Asn	Asn	Phe	Gly	Phe	Ala	Tyr	Asp	Val	Glu	Leu	Gly	Ile	Lys	Asp	435	440	445	

Lys Ile Arg Ala Ile Ala Gln Lys Val Tyr Gly Ala Glu Asp Val Asp  
 450 455 460  
 Phe Ser Ala Glu Ala Ser Ala Glu Ile Ala Ser Leu Glu Lys Leu Gly  
 465 470 475 480  
 Leu Asp Lys Met Pro Ile Cys Met Ala Lys Thr Gln Tyr Ser Leu Ser  
 485 490 495  
 Asp Asn Ala Lys Leu Leu Gly Cys Pro Glu Gly Phe Arg Ile Ala Val  
 500 505 510  
 Arg Gly Ile Thr Val Ser Ala Gly Ala Gly Phe Ile Val Ala Leu Cys  
 515 520 525  
 Gly Asn Met Met Lys Met Pro Gly Leu Pro Lys Val Pro Ala Ala Glu  
 530 535 540  
 Lys Ile Asp Val Asp Glu His Gly Val Ile His Gly Leu Phe  
 545 550 555

<210> 555  
 <211> 1677  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 555  
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 attgccgcca agcttggtct gaatgccgac aacattgagc cttacggtca ttacaaggcg 120  
 aaaatcaatc ctgccgaagc gttcaaactg ccgcaaaaac agggcaggct gattttggtt 180  
  
 accgccatca acccgactcc ggcgggcgaa ggcaaaacca ccgtaaccat cggttttggcg 240  
 gacgcgttgc gccacatcgg caaagatgcc gtgattgccc tgcgcgaacc ttctctgggg 300  
 ccggtgttcg gcgtgaaagg cggcgcgcca ggcgcggtct atgcccaagt tttgccgatg 360  
 gaagacatca acctgcactt caccggagat ttacacgcca tcggtgcggc aaataatctg 420  
 cttgccgcga tgctcgacaa ccatactctac caaggcaacg agttgaacat cgaccccaaa 480  
 cgcggtctgt ggcgggcggt ggtcgatatg aacgaccgcc agttgcgcaa catcatcgac 540  
 ggcatgggta aaccggttga cggcgatgat cgtcctgacg gtttcgatat taccgttgct 600  
 tccgaagtga tggcgggtatt ctgtcttgcc aaagacatca gcgatttgaa agagcgtttg 660  
 ggcaacatcc ttgtcgcccta cgccaaagac ggcagccccg ttacgcgcaa agatttgaaa 720  
 gcgaatggcg cgatggcggc attgcttaaa gatgcgatta agcccaactt ggtgcaaacc 780  
 atcgaaggca cgccgcctt cgtacacggc ggcccggtcg ccaacatcgc ccacggctgc 840  
 aactccgtaa ccgcaaccgc tctggcgaaa caccttgccg attacgcgtt aaccgaagca 900  
 ggcttcggcg cggacttggt cgcgaaaaaa ttctgcgaca tcaaatagcc ccttgccggt 960  
 ttgaaacctg atgcggctgt tgcgtggcg actgtccgcg cgttgaaata taacggcggc 1020  
 gtggaacgcg ccaacctcgg cgaagaaaat ttagacgctt tggaaaaagg tttgcccaac 1080  
 ctgtgaaac acatttccaa cctgaaaaac gtattcggac tgcccgtcgt cgttgcgctc 1140  
 aaccgcttcg tgctcgacgc cgatgccgag ttggcgatga ttgaaaaagc ctgtgccgaa 1200  
 cacggcggtt aggtttccct gaccgaagtg tggggcaaaag gtggtgcggg cggcgcggt 1260  
 ttggcgcgca agtcgtcaa cgccattgaa agtcaaacca ataacttcgg ttctgcctac 1320  
 gatgtcgagt tgggcatcaa agacaaaatc cgtgcgattg cccaaaaagt gtacggcgcg 1380  
 gaagatgttg atttcagcgc ggaagcgtct gccgaaatcg cttacttggg aaaactgggc 1440  
 ttggacaaaa tgccgatctg catggcgaaa acccaatact ctttgagcga caacgccaaa 1500  
 ctgttgggct gcccgaaga cttccgcata gccgtgcgcg gcatcacctt ttccgcaggc 1560  
 gcaggtttca tcgtcgccct gtgcggcaac atgatgaaaa tgcccggcct gcccaaagtt 1620  
 ccggtgcgcg agaaaatcga tgtggacgca gaaggcgtga ttcacggctt gttctga 1677

<210> 556  
<211> 558  
<212> PRT  
<213> Neisseria meningitidis

<400> 556

Met	Ser	Phe	Lys	Thr	Asp	Ala	Glu	Ile	Ala	Gln	Ser	Ser	Thr	Met	Arg
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Pro	Ile	Gly	Glu	Ile	Ala	Ala	Lys	Leu	Gly	Leu	Asn	Ala	Asp	Asn	Ile
		20						25					30		
Glu	Pro	Tyr	Gly	His	Tyr	Lys	Ala	Lys	Ile	Asn	Pro	Ala	Glu	Ala	Phe
		35					40					45			
Lys	Leu	Pro	Gln	Lys	Gln	Gly	Arg	Leu	Ile	Leu	Val	Thr	Ala	Ile	Asn
	50					55					60				
Pro	Thr	Pro	Ala	Gly	Glu	Gly	Lys	Thr	Thr	Val	Thr	Ile	Gly	Leu	Ala
	65				70					75					80
Asp	Ala	Leu	Arg	His	Ile	Gly	Lys	Asp	Ala	Val	Ile	Ala	Leu	Arg	Glu
				85					90						95
Pro	Ser	Leu	Gly	Pro	Val	Phe	Gly	Val	Lys	Gly	Gly	Ala	Ala	Gly	Gly
		100						105					110		
Gly	Tyr	Ala	Gln	Val	Leu	Pro	Met	Glu	Asp	Ile	Asn	Leu	His	Phe	Thr
		115					120					125			
Gly	Asp	Phe	His	Ala	Ile	Gly	Ala	Ala	Asn	Asn	Leu	Leu	Ala	Ala	Met
	130					135					140				
Leu	Asp	Asn	His	Ile	Tyr	Gln	Gly	Asn	Glu	Leu	Asn	Ile	Asp	Pro	Lys
	145				150					155					160
Arg	Val	Leu	Trp	Arg	Arg	Val	Val	Asp	Met	Asn	Asp	Arg	Gln	Leu	Arg
				165					170					175	
Asn	Ile	Ile	Asp	Gly	Met	Gly	Lys	Pro	Val	Asp	Gly	Val	Met	Arg	Pro
			180					185					190		
Asp	Gly	Phe	Asp	Ile	Thr	Val	Ala	Ser	Glu	Val	Met	Ala	Val	Phe	Cys
		195					200					205			
Leu	Ala	Lys	Asp	Ile	Ser	Asp	Leu	Lys	Glu	Arg	Leu	Gly	Asn	Ile	Leu
	210					215						220			
Val	Ala	Tyr	Ala	Lys	Asp	Gly	Ser	Pro	Val	Tyr	Ala	Lys	Asp	Leu	Lys
	225				230					235					240
Ala	Asn	Gly	Ala	Met	Ala	Ala	Leu	Leu	Lys	Asp	Ala	Ile	Lys	Pro	Asn
				245					250					255	
Leu	Val	Gln	Thr	Ile	Glu	Gly	Thr	Pro	Ala	Phe	Val	His	Gly	Gly	Pro



260	265	270
Phe Ala Asn Ile Ala His Gly Cys Asn Ser Val Thr Ala Thr Arg Leu 275 280 285		
Ala Lys His Leu Ala Asp Tyr Ala Val Thr Glu Ala Gly Phe Gly Ala 290 295 300		
Asp Leu Gly Ala Glu Lys Phe Cys Asp Ile Lys Cys Arg Leu Ala Gly 305 310 315 320		
Leu Lys Pro Asp Ala Ala Val Val Val Ala Thr Val Arg Ala Leu Lys 325 330 335		
Tyr Asn Gly Gly Val Glu Arg Ala Asn Leu Gly Glu Glu Asn Leu Asp 340 345 350		
Ala Leu Glu Lys Gly Leu Pro Asn Leu Leu Lys His Ile Ser Asn Leu 355 360 365		
Lys Asn Val Phe Gly Leu Pro Val Val Val Ala Leu Asn Arg Phe Val 370 375 380		
Ser Asp Ala Asp Ala Glu Leu Ala Met Ile Glu Lys Ala Cys Ala Glu 385 390 395 400		
His Gly Val Glu Val Ser Leu Thr Glu Val Trp Gly Lys Gly Gly Ala 405 410 415		
Gly Gly Ala Asp Leu Ala Arg Lys Val Val Asn Ala Ile Glu Ser Gln 420 425 430		
Thr Asn Asn Phe Gly Phe Ala Tyr Asp Val Glu Leu Gly Ile Lys Asp 435 440 445		
Lys Ile Arg Ala Ile Ala Gln Lys Val Tyr Gly Ala Glu Asp Val Asp 450 455 460		
Phe Ser Ala Glu Ala Ser Ala Glu Ile Ala Ser Leu Glu Lys Leu Gly 465 470 475 480		
Leu Asp Lys Met Pro Ile Cys Met Ala Lys Thr Gln Tyr Ser Leu Ser 485 490 495		
Asp Asn Ala Lys Leu Leu Gly Cys Pro Glu Asp Phe Arg Ile Ala Val 500 505 510		
Arg Gly Ile Thr Val Ser Ala Gly Ala Gly Phe Ile Val Ala Leu Cys 515 520 525		
Gly Asn Met Met Lys Met Pro Gly Leu Pro Lys Val Pro Ala Ala Glu 530 535 540		
Lys Ile Asp Val Asp Ala Glu Gly Val Ile His Gly Leu Phe 545 550 555		

<210> 557  
 <211> 1677  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 557  
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 attgccgcca agctgggttt gaacgttgac aacattgagc cttacggtca ttacaaaagcc 120  
 aaaatcaatc ctgccgaagc gttcaaactg ccgcaaaaac agggcaggct gatttttggtt 180  
 accgccatca acccgactcc ggcgggcgaa ggtaaaacca ccgtaaccat cggttttggtg 240  
 gacgcattgc gccatatcgg caaagactct gtgattgctt tgcgcgagcc ttctttgggt 300  
 ccggtgttcg gcgtgaaagg cggcgcggca ggcggcggt atgcccaagt tttgccgatg 360  
 gaagacatca acctgcactt caccggagat tttcacgcca tcggtgcggc aaataatctg 420  
 cttgccgcca tgctcgacaa ccatactctac caaggcaacg agttgaacat cgaccccaaa 480  
 cgctgctgtt ggcgggcgct ggtcgatatg aacgaccgcc agttgcgcaa catcatcgac 540  
 ggcatgggca agcctgttga cggcgtgatg cgtcctgacg gtttcgatat taccgttgct 600  
 tccgaagtga ttggcggtatt ctgtcttgcc aaagacatca gcgatttgaa agagcgtttg 660  
 ggcaacatcc ttgtcgccca cgccaaagac ggcagccccc tttacgcca agatttgaaa 720  
 gcgaatggcg cgatggcggc attgcttaaa gatgcgatta agcccaactt ggtgcaaacc 780  
 atcgaaggca cgcccgccct cgtacacggc ggcccggttc ccaacatcgc ccacggctgc 840  
 aactccgtaa ccgcaaccgc tctggcgaaa caccttgccg attacgccgt aaccgaagca 900  
 ggcttcggcg cggacttggt cgcggaaaaa ttctgcgaca tcaaattgcc ccttgccggt 960  
 ttgaaacctg atgcggctgt tgtcgtggcg actgtccgcg cgttgaaata taacggcggc 1020  
 gtggaacgcg ccaacctcgg cgaagaaaat ttagacgctt tggaaaaagg tttgcccaac 1080  
 ctgctgaaac acatttccaa cctgaaaaac gtattcggac tgcccgtcgt cgttgcgctc 1140  
 aaccgcttcg tgtccgactc cgatgccgag ttggcgatga ttgaaaaagc ctgtgccgaa 1200  
 cacggcggtt aggtttccct gaccgaagtg tggggcaaag gtggtgcggg cggcgcggat 1260  
 ttggcgcgca aagtcgtcaa cgccattgaa agtcaaacca ataacttcgg tttcgccatc 1320  
 gatgtcgagt tgggcatcaa agacaaaatc cgtgcgattg cccaaaaagt gtacggcgcg 1380  
 gaagatgttg atttcagcgc ggaagcgtct gccgaaatcg cttcactgga aaaactgggc 1440  
 ttggacaaaa tgccgatctg catggcgaaa acccaatact ctttgagcga caacgcaaaa 1500  
 ctgttgggct gcccgaaga ctccgcctc gccgtgcgcg gcataccgt ttccgcaggc 1560  
 gcaggtttca tcgtcgccct gtgcggcaac atgatgaaaa tgcccggcct gcccaaagtt 1620  
 ccggtgcgcg agaaaatcga tgtggacgca gaaggcgtga ttcacggctt gttctga 1677

<210> 558  
 <211> 558  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 558  
 Met Ser Phe Lys Thr Asp Ala Glu Ile Ala Gln Ser Ser Thr Met Arg  
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 Pro Ile Gly Glu Ile Ala Ala Lys Leu Gly Leu Asn Val Asp Asn Ile  
 20 25 30  
 Glu Pro Tyr Gly His Tyr Lys Ala Lys Ile Asn Pro Ala Glu Ala Phe  
 35 40 45  
 Lys Leu Pro Gln Lys Gln Gly Arg Leu Ile Leu Val Thr Ala Ile Asn  
 50 55 60  
 Pro Thr Pro Ala Gly Glu Gly Lys Thr Thr Val Thr Ile Gly Leu Ala  
 65 70 75 80

Asp Ala Leu Arg His Ile Gly Lys Asp Ser Val Ile Ala Leu Arg Glu  
 85 90 95

Pro Ser Leu Gly Pro Val Phe Gly Val Lys Gly Gly Ala Ala Gly Gly  
 100 105 110

Gly Tyr Ala Gln Val Leu Pro Met Glu Asp Ile Asn Leu His Phe Thr  
 115 120 125

Gly Asp Phe His Ala Ile Gly Ala Ala Asn Asn Leu Leu Ala Ala Met  
 130 135 140

Leu Asp Asn His Ile Tyr Gln Gly Asn Glu Leu Asn Ile Asp Pro Lys  
 145 150 155 160

Arg Val Leu Trp Arg Arg Val Val Asp Met Asn Asp Arg Gln Leu Arg  
 165 170 175

Asn Ile Ile Asp Gly Met Gly Lys Pro Val Asp Gly Val Met Arg Pro  
 180 185 190

Asp Gly Phe Asp Ile Thr Val Ala Ser Glu Val Met Ala Val Phe Cys  
 195 200 205

Leu Ala Lys Asp Ile Ser Asp Leu Lys Glu Arg Leu Gly Asn Ile Leu  
 210 215 220

Val Ala Tyr Ala Lys Asp Gly Ser Pro Val Tyr Ala Lys Asp Leu Lys  
 225 230 235 240

Ala Asn Gly Ala Met Ala Ala Leu Leu Lys Asp Ala Ile Lys Pro Asn  
 245 250 255

Leu Val Gln Thr Ile Glu Gly Thr Pro Ala Phe Val His Gly Gly Pro  
 260 265 270

Phe Ala Asn Ile Ala His Gly Cys Asn Ser Val Thr Ala Thr Arg Leu  
 275 280 285

Ala Lys His Leu Ala Asp Tyr Ala Val Thr Glu Ala Gly Phe Gly Ala  
 290 295 300

Asp Leu Gly Ala Glu Lys Phe Cys Asp Ile Lys Cys Arg Leu Ala Gly  
 305 310 315 320

Leu Lys Pro Asp Ala Ala Val Val Val Ala Thr Val Arg Ala Leu Lys  
 325 330 335

Tyr Asn Gly Gly Val Glu Arg Ala Asn Leu Gly Glu Glu Asn Leu Asp  
 340 345 350

Ala Leu Glu Lys Gly Leu Pro Asn Leu Leu Lys His Ile Ser Asn Leu  
 355 360 365

Lys Asn Val Phe Gly Leu Pro Val Val Val Ala Leu Asn Arg Phe Val  
 370 375 380

Ser Asp Ser Asp Ala Glu Leu Ala Met Ile Glu Lys Ala Cys Ala Glu  
 385 390 395 400  
 His Gly Val Glu Val Ser Leu Thr Glu Val Trp Gly Lys Gly Gly Ala  
 405 410 415  
 Gly Gly Ala Asp Leu Ala Arg Lys Val Val Asn Ala Ile Glu Ser Gln  
 420 425 430  
 Thr Asn Asn Phe Gly Phe Ala Tyr Asp Val Glu Leu Gly Ile Lys Asp  
 435 440 445  
 Lys Ile Arg Ala Ile Ala Gln Lys Val Tyr Gly Ala Glu Asp Val Asp  
 450 455 460  
 Phe Ser Ala Glu Ala Ser Ala Glu Ile Ala Ser Leu Glu Lys Leu Gly  
 465 470 475 480  
 Leu Asp Lys Met Pro Ile Cys Met Ala Lys Thr Gln Tyr Ser Leu Ser  
 485 490 495  
 Asp Asn Ala Lys Leu Leu Gly Cys Pro Glu Asp Phe Arg Ile Ala Val  
 500 505 510  
 Arg Gly Ile Thr Val Ser Ala Gly Ala Gly Phe Ile Val Ala Leu Cys  
 515 520 525  
 Gly Asn Met Met Lys Met Pro Gly Leu Pro Lys Val Pro Ala Ala Glu  
 530 535 540  
 Lys Ile Asp Val Asp Ala Glu Gly Val Ile His Gly Leu Phe  
 545 550 555

<210> 559  
 <211> 477  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 559  
 atgcgtgccg atttcatgtt tgccgacaat atgcccgtgc aggtgcgcca acgcgccttc 60  
 tatttcaagt tgtcccgttt tgccgcgatg ccaaatatgg taggcaaacc gctcttcggg 120  
 cgacaggccg gtcagcccgg caaatgttc ggcaacatcc tgatgttcgt ccgccagcat 180  
 attgatgcag aggtgcggt tttccgacag gatcggaatg attcgcgcac tccggtttat 240  
 gcacagcatc acggtcggcg gctcgtcggg aaccggcgca accgcggtca ttgtaatgcc 300  
 gtaacgccct gccgcaccgt ctgtcgtgat gacatgaacg cctgccgcac aggatgccat 360  
 cgcatacagg aacgaagttt gaaaagtttt ctgcaaatac gccatttttc ccctttaaac 420  
 cgtcccctat ataagaatgc tgcacacaag gcatccccc atgtgcagca gttctga 477

<210> 560  
 <211> 158  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 560

Met Arg Ala Asp Phe Met Phe Ala Asp Asn Met Pro Val Gln Val Arg  
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 Gln Arg Ala Phe Tyr Phe Lys Leu Ser Arg Phe Ala Ala Met Pro Asn  
 20 25 30  
 Met Val Gly Lys Pro Leu Phe Gly Arg Gln Ala Gly Gln Pro Gly Lys  
 35 40 45  
 Met Phe Gly Asn Ile Leu Met Phe Val Arg Gln His Ile Asp Ala Glu  
 50 55 60  
 Ala Ala Val Phe Arg Gln Asp Arg Asn Asp Ser Arg Thr Pro Val Tyr  
 65 70 75 80  
 Ala Gln His His Gly Arg Arg Leu Val Gly Asn Arg Arg Asn Arg Arg  
 85 90 95  
 His Cys Asn Ala Val Thr Pro Cys Arg Thr Val Cys Arg Asp Asp Met  
 100 105 110  
 Asn Ala Cys Arg Thr Gly Cys His Arg Ile Thr Glu Arg Ser Leu Lys  
 115 120 125  
 Ser Phe Leu Gln Ile Arg His Phe Ser Pro Leu Asn Arg Pro Leu Tyr  
 130 135 140  
 Lys Asn Ala Ala His Lys Ala Ser Pro His Val Gln Gln Phe  
 145 150 155

<210> 561  
 <211> 477  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 561  
 atgctgtgccg atttcatgtt tgccgacaat atgcccgtgc aggtgcgcca acgcgccttc 60  
 tatttcaagt tgtcccgttt tgccgcgatg ccagatgtgg taggcaaacc gctcttcggg 120  
 cgacaggccg gtcagcccgg caaaatgttc ggcaacatcc tgatgttcgt ccgccagcgt 180  
 attgatgcag aggtgccgt tttccgacag gatcggaatg attcgcgcac tccggttgat 240  
 gcacagcatc acggtcggcg gtcgtcgtgt aaccggcgcg accgcggtca ttgtaatgcc 300  
 gtaacgccct gccgcaccgt ctgtcgtgat gacatgaacg cctgccgcgc aagatgccat 360  
 cgcatacagg aacgaagttt gaaaattttt ctgcaaatac gccatttttc ccctttaaac 420  
 tgtcccctat ataagaatgc tgcacacaag gcatccccc atgtgcagca gttttga 477

<210> 562  
 <211> 158  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 562  
 Met Arg Ala Asp Phe Met Phe Ala Asp Asn Met Pro Val Gln Val Arg  
 1 5 10 15  
 Gln Arg Ala Leu Tyr Phe Lys Leu Ser Arg Phe Ala Ala Met Pro Asp

20                      25                      30  
 Val Val Gly Lys Pro Leu Phe Gly Arg Gln Ala Gly Gln Pro Gly Lys  
                     35                      40                      45  
 Met Phe Gly Asn Ile Leu Met Phe Val Arg Gln Arg Ile Asp Ala Glu  
                     50                      55                      60  
 Ala Ala Val Phe Arg Gln Asp Arg Asn Asp Ser Arg Thr Pro Val Asp  
                     65                      70                      75                      80  
 Ala Gln His His Gly Arg Arg Leu Val Gly Asn Arg Arg Asp Arg Arg  
                     85                      90                      95  
 His Cys Asn Ala Val Thr Pro Cys Arg Thr Val Cys Arg Asp Asp Met  
                     100                      105                      110  
 Asn Ala Cys Arg Ala Arg Cys His Arg Ile Thr Glu Arg Ser Leu Lys  
                     115                      120                      125  
 Ile Phe Leu Gln Ile Arg His Phe Ser Pro Leu Asn Cys Pro Leu Tyr  
                     130                      135                      140  
 Lys Asn Ala Ala His Lys Ala Ser Pro His Val Gln Gln Phe  
                     145                      150                      155

<210> 563  
 <211> 948  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 563  
 atgctgtgccg atttcatgtt tgccgacaat atgcccgtgc aggtgcgccca acgcgccctc 60  
 tatttcaagt tgtcccgttt tgccgcgatg ccagatgtgg taggcaaacc gctcttcggg 120  
 cgacaggccg gtcagcccgg caaaatgttc ggcaacatcc tgatgttcgt ccgccagcgt 180  
 attgatgcag aggtctgccgt tttccgacag gatcggaatg attcgcgcac tccggttgat 240  
 gcacagcatc acggtcggcg gctcgtccgt aaccggcgca accgcgctca ttgtaatgcc 300  
 gtaacgccct gccgcaccgt ctgtcgtgat gacatgaacg cctgccgcac aggatgccat 360  
 cgcatcacgg aacgaagttt gaaaagtttt ctgcaaacc gccatttttc ccttttaaac 420  
 tgtcccctat ataagaatgc tgcacacaag gcacccccca tgtgcagcag ttctgattca 480  
 aaaagccgtc ggtcggacat ttccgcgcgt tacggcgtat tacgagttca acgcatcctc 540  
 gattttggca agttctgccca acaggtcttt aagcagcagc attttctcgc ggcccagcac 600  
 ttctctgata gcgtcgtaac gctcgtccac ttcttcgcgc atttctctcat acagcttctc 660  
 gccctcggca gtcagcttca gaaaaacacg tcgttggtcg ttggaagggt tcaggcggac 720  
 aaccaaacc gctttttcaa ggccgggtcag gataccggtc aggtctggggc gcaaaatgca 780  
 cgcctgattc gccaaatctt gaaagtccag cgtgccgttt tccgccaaaa gacggataat 840  
 ccgccattgc tgatcggtaa tattcgcctg attcagaata ggcctgaatt gggtcacatc 900  
 ggcttccctt gcctgtatca gaccgatatt gatagacgca tgttttga 948

<210> 564  
 <211> 315  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 564

Met Arg Ala Asp Phe Met Phe Ala Asp Asn Met Pro Val Gln Val Arg  
1 5 10 15  
Gln Arg Ala Leu Tyr Phe Lys Leu Ser Arg Phe Ala Ala Met Pro Asp  
20 25 30  
Val Val Gly Lys Pro Leu Phe Gly Arg Gln Ala Gly Gln Pro Gly Lys  
35 40 45  
Met Phe Gly Asn Ile Leu Met Phe Val Arg Gln Arg Ile Asp Ala Glu  
50 55 60  
Ala Ala Val Phe Arg Gln Asp Arg Asn Asp Ser Arg Thr Pro Val Asp  
65 70 75 80  
Ala Gln His His Gly Arg Arg Leu Val Arg Asn Arg Arg Asn Arg Arg  
85 90 95  
His Cys Asn Ala Val Thr Pro Cys Arg Thr Val Cys Arg Asp Asp Met  
100 105 110  
Asn Ala Cys Arg Thr Gly Cys His Arg Ile Thr Glu Arg Ser Leu Lys  
115 120 125  
Ser Phe Leu Gln Ile Arg His Phe Ser Pro Leu Asn Cys Pro Leu Tyr  
130 135 140  
Lys Asn Ala Ala His Lys Ala Pro Pro Met Cys Ser Ser Ser Asp Ser  
145 150 155 160  
Lys Ser Arg Arg Ser Asp Ile Ser Ala Arg Tyr Gly Val Leu Arg Val  
165 170 175  
Gln Arg Ile Leu Asp Phe Gly Lys Phe Cys Gln Gln Val Phe Lys Gln  
180 185 190  
Gln His Phe Leu Ala Ala Gln His Phe Leu Asp Ser Val Val Thr Leu  
195 200 205  
Val His Phe Phe Ala Asp Phe Leu Ile Gln Leu Leu Ala Leu Gly Ser  
210 215 220  
Gln Leu Gln Lys Asn Thr Ser Leu Val Val Gly Arg Phe Gln Ala Asp  
225 230 235 240  
Asn Gln Thr Arg Phe Phe Lys Ala Gly Gln Asp Thr Gly Gln Ala Gly  
245 250 255  
Ala Gln Asn Ala Arg Leu Ile Arg Gln Ile Leu Lys Val Gln Arg Ala  
260 265 270  
Val Phe Arg Gln Lys Thr Asp Asn Pro Pro Leu Leu Ile Gly Asn Ile  
275 280 285  
Arg Leu Ile Gln Asn Arg Pro Glu Leu Gly His Gln Gly Phe Pro Cys  
290 295 300

Leu Tyr Gln Thr Asp Ile Asp Arg Arg Met Phe  
305 310 315

<210> 565  
<211> 1290  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 565  
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agccgcattt ttcaaacgct aggcgcagac ccgcacaatt tgggctgggt ttatcatcctg 120  
ccgcgcgtgg cggggatgct ggttcagccg atagtgggct actactcaga ccgcacttgg 180  
aagccgcgct tgggcgcccg ccgcctgccc tatctgcttt acggcacgct gattgcggtc 240  
atcgtgatga ttttgatgcc gaactcgggc agcttcgggt tcggctatgc gtcgctggcg 300  
gccttgctgt tcggcgcgct gatgattgct ctggtggacg tgcgctcgaa tatggcgatg 360  
cagccggtta agatgatggg cggcgatatg gtcaacgagg agcagaaaag ctacgcctac 420  
gggattcaaa gtttcttagc gaatacggac gcggttggtg cagcgattct gccgtttgtg 480  
ttcgcgtata tcggtttggc gaacactgcc gagaaaggcg ttgtgccaca aaccgtggtc 540  
gtagcattct atgtgggtgc ggcgttactg attattacca gtgcgttcac aatctccaaa 600  
gtcaaagaat acgaccgga aacctacgcc cgttaccacg gcacgatgt cgcgcgaat 660  
caggaaaaag ccaactgggt cgaactctta aaaaccgcgc ctaaagtgtt ttggacgggt 720  
actccggtac agtttttctg ctggttcgcc ttccggtata tgtggactta ctcggcaggc 780  
gcgattgcag aaaacgtctg gcacactacc gatgcgtctt ccgtaggcca tcaggaggcg 840  
ggcaaccggt acggcggttt ggccggcggtg tagtcggttg cggcggtgat ttgttcgttt 900  
attctggcaa aagtaccgaa taaataccat aaggcggtt attcggctg ttggcctttg 960  
ggcgcgctcg gtttcttctc tatcttcttc atctacaatc aatacgcact catcctgtct 1020  
tatacttaaa tcggcatcgc ttggcgggc attatcactt atccgctgac gattgtggcc 1080  
aacgctttgt cgggcaaaca catggatact tatttgggac tgtttaacgg ctctgtctgt 1140  
atgccgcaaa tcgtcgcttc gctgttgagt ttctgtcttt tcccgatgct gggcgcccat 1200  
caggcaacca tgttcttggg tgcaggcgca gtcttgctgc tgggagcctt ctcagtctgt 1260  
ctgattaaag agatccacgg cggggtttga 1290

<210> 566  
<211> 428  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 566  
Met Leu Ser Phe Gly Tyr Leu Gly Val Gln Thr Ala Phe Thr Leu Gln  
1 5 10 15  
Ser Ser Gln Met Ser Arg Ile Phe Gln Thr Leu Gly Ala Asp Pro His  
20 25 30  
Asn Leu Gly Trp Phe Phe Ile Leu Pro Pro Leu Ala Gly Met Leu Val  
35 40 45  
Gln Pro Ile Val Gly Tyr Tyr Ser Asp Arg Thr Trp Lys Pro Arg Leu  
50 55 60  
Gly Gly Arg Arg Leu Pro Tyr Leu Leu Tyr Gly Thr Leu Ile Ala Val  
65 70 75 80  
Ile Val Met Ile Leu Met Pro Asn Ser Gly Ser Phe Gly Phe Gly Tyr  
85 90 95



Ala Ser Leu Ala Ala Leu Ser Phe Gly Ala Leu Met Ile Ala Leu Leu  
 100 105 110  
 Asp Val Ser Ser Asn Met Ala Met Gln Pro Phe Lys Met Met Val Gly  
 115 120 125  
 Asp Met Val Asn Glu Glu Gln Lys Ser Tyr Ala Tyr Gly Ile Gln Ser  
 130 135 140  
 Phe Leu Ala Asn Thr Asp Ala Val Val Ala Ala Ile Leu Pro Phe Val  
 145 150 155 160  
 Phe Ala Tyr Ile Gly Leu Ala Asn Thr Ala Glu Lys Gly Val Val Pro  
 165 170 175  
 Gln Thr Val Val Val Ala Phe Tyr Val Gly Ala Ala Leu Leu Ile Ile  
 180 185 190  
 Thr Ser Ala Phe Thr Ile Ser Lys Val Lys Glu Tyr Asp Pro Glu Thr  
 195 200 205  
 Tyr Ala Arg Tyr His Gly Ile Asp Val Ala Ala Asn Gln Glu Lys Ala  
 210 215 220  
 Asn Trp Phe Glu Leu Leu Lys Thr Ala Pro Lys Val Phe Trp Thr Val  
 225 230 235 240  
 Thr Pro Val Gln Phe Phe Cys Trp Phe Ala Phe Arg Tyr Met Trp Thr  
 245 250 255  
 Tyr Ser Ala Gly Ala Ile Ala Glu Asn Val Trp His Thr Thr Asp Ala  
 260 265 270  
 Ser Ser Val Gly His Gln Glu Ala Gly Asn Arg Tyr Gly Val Leu Ala  
 275 280 285  
 Ala Val Ser Val Ala Ala Val Ile Cys Ser Phe Ile Leu Ala Lys Val  
 290 295 300  
 Pro Asn Lys Tyr His Lys Ala Gly Tyr Phe Gly Cys Leu Ala Leu Gly  
 305 310 315 320  
 Ala Leu Gly Phe Phe Ser Ile Phe Phe Ile Tyr Asn Gln Tyr Ala Leu  
 325 330 335  
 Ile Leu Ser Tyr Ile Leu Ile Gly Ile Ala Trp Ala Gly Ile Ile Thr  
 340 345 350  
 Tyr Pro Leu Thr Ile Val Ala Asn Ala Leu Ser Gly Lys His Met Asp  
 355 360 365  
 Thr Tyr Leu Gly Leu Phe Asn Gly Ser Val Cys Met Pro Gln Ile Val  
 370 375 380  
 Ala Ser Leu Leu Ser Phe Val Leu Phe Pro Met Leu Gly Gly His Gln

385

390

395

400

Ala Thr Met Phe Leu Val Ala Gly Ala Val Leu Leu Leu Gly Ala Phe  
 405 410 415

Ser Val Cys Leu Ile Lys Glu Ile His Gly Gly Val  
 420 425

&lt;210&gt; 567

&lt;211&gt; 1290

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;400&gt; 567

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&lt;210&gt; 568

&lt;211&gt; 429

&lt;212&gt; PRT

<213> *Neisseria meningitidis*

&lt;400&gt; 568

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Met Leu Ser Phe Gly Phe Leu Gly Val Gln Thr Ala Phe Thr Leu Gln
  1           5           10          15

Ser Ser Gln Met Ser Arg Ile Phe Gln Thr Leu Gly Ala Asp Pro His
  20           25           30

Asn Leu Gly Trp Phe Phe Ile Leu Pro Pro Leu Ala Gly Met Leu Val
  35           40           45

Gln Pro Ile Val Gly His Tyr Ser Asp Arg Thr Trp Lys Pro Arg Leu
  50           55           60

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Gly Gly Arg Arg Leu Pro Tyr Leu Leu Tyr Gly Thr Leu Ile Ala Val  
 65 70 75 80

Ile Val Met Ile Leu Met Pro Asn Ser Gly Ser Phe Gly Phe Gly Tyr  
 85 90 95

Ala Ser Leu Ala Ala Leu Ser Phe Gly Ala Leu Met Ile Ala Leu Leu  
 100 105 110

Asp Val Ser Ser Asn Met Ala Met Gln Pro Phe Lys Met Met Val Gly  
 115 120 125

Asp Met Val Asn Glu Glu Gln Lys Gly Tyr Ala Tyr Gly Ile Gln Ser  
 130 135 140

Phe Leu Ala Asn Thr Gly Ala Val Val Ala Ala Ile Leu Pro Phe Val  
 145 150 155 160

Phe Ala Tyr Ile Gly Leu Ala Asn Thr Ala Glu Lys Gly Val Val Pro  
 165 170 175

Gln Thr Val Val Val Ala Phe Tyr Val Gly Ala Ala Leu Leu Val Ile  
 180 185 190

Thr Ser Ala Phe Thr Ile Phe Lys Val Lys Glu Tyr Asp Pro Glu Thr  
 195 200 205

Tyr Ala Arg Tyr His Gly Ile Asp Val Ala Ala Asn Gln Glu Lys Ala  
 210 215 220

Asn Trp Ile Glu Leu Leu Lys Thr Ala Pro Lys Ala Phe Trp Thr Val  
 225 230 235 240

Thr Leu Val Gln Phe Phe Cys Trp Phe Ala Phe Gln Tyr Met Trp Thr  
 245 250 255

Tyr Ser Ala Gly Ala Ile Ala Glu Asn Val Trp His Thr Thr Asp Ala  
 260 265 270

Ser Ser Val Gly Tyr Gln Glu Ala Gly Asn Trp Tyr Gly Val Leu Ala  
 275 280 285

Ala Val Gln Ser Val Ala Ala Val Ile Cys Ser Phe Val Leu Ala Lys  
 290 295 300

Val Pro Asn Lys Tyr His Lys Ala Gly Tyr Phe Gly Cys Leu Ala Leu  
 305 310 315 320

Gly Ala Leu Gly Phe Phe Ser Val Phe Phe Ile Gly Asn Gln Tyr Ala  
 325 330 335

Leu Val Leu Ser Tyr Thr Leu Ile Gly Ile Ala Trp Ala Gly Ile Ile  
 340 345 350

Thr Tyr Pro Leu Thr Ile Val Thr Asn Ala Leu Ser Gly Lys His Met  
 355 360 365

Gly Thr Tyr Leu Gly Leu Phe Asn Gly Ser Ile Cys Met Pro Gln Ile  
370 375 380

Val Ala Ser Leu Leu Ser Phe Val Leu Phe Pro Met Leu Gly Gly Leu  
385 390 395 400

Gln Ala Thr Met Phe Leu Val Gly Gly Val Val Leu Leu Leu Gly Ala  
405 410 415

Phe Ser Val Phe Leu Ile Lys Glu Thr His Gly Gly Val  
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<210> 569  
<211> 1290  
<212> DNA  
<213> Neisseria meningitidis

<400> 569  
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ccgccgctgg cgggggatgct ggtgcagccg attgtcggcc attactccga ccgcacttgg 180  
aagccgcggt tgggcggccg ccgtctgccg tatctgcttt atggcacgct gattgcggtt 240  
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tttgcgata tgggtttggc gaacaccgcc gagaaaggcg ttgtgccgca gaccgtggtc 540  
gtggcggttt atgtgggtgc ggcgttgctg gtgattacca gcgcgttcac gattttcaaa 600  
gtgaaggaat acaatccgga aacctacgcc cgttaccacg gcatcgatgt cgcgcggaat 660  
caggaaaaag ccaactggat cgaactcttg aaaaccgcgc ctaaggcggt ttggacggtt 720  
actttggtgc aattcttctg ctggttcgcc ttccaatata tgtggactta ctccggcaggc 780  
gcgattgcgg aaaacgtctg gcacaccacc gatgcgtctt ccgtaggtta tcaggaggcg 840  
ggtaactggt acggcgtttt ggcggcggtg cagtcgggtt cggcggtgat ttgttcgttt 900  
gtattggcga aagtgccgaa taaataccat aaggcggtt atttcggctg tttggctttg 960  
ggcgcgctcg gctttttctc cgttttcttc atcggaacc aatacgcgt ggtgttgtct 1020  
tataccttaa tggcatcgc ttgggcgggc attatcactt atccgctgac gattgtgacc 1080  
aacgccttgt cgggcaagca tatgggcact tacttgggccc tgtttaacgg ctctatctgt 1140  
atgccgcaaa tcgtcgcttc gctgttgagt ttctgtcttt tccctatgct gggcggtt 1200  
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ctgattaaag aaacacacgg cggggtttga 1290

<210> 570  
<211> 429  
<212> PRT  
<213> Neisseria meningitidis

<400> 570  
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20 25 30

Ser Leu Gly Trp Phe Phe Ile Leu Pro Pro Leu Ala Gly Met Leu Val

35

40

45

Gln Pro Ile Val Gly His Tyr Ser Asp Arg Thr Trp Lys Pro Arg Leu  
50 55 60

Gly Gly Arg Arg Leu Pro Tyr Leu Leu Tyr Gly Thr Leu Ile Ala Val  
65 70 75 80

Ile Val Met Ile Leu Met Pro Asn Ser Gly Ser Phe Gly Phe Gly Tyr  
85 90 95

Ala Ser Leu Ala Ala Leu Ser Phe Gly Ala Leu Met Ile Ala Leu Leu  
100 105 110

Asp Val Ser Ser Asn Met Ala Met Gln Pro Phe Lys Met Met Val Gly  
115 120 125

Asp Met Val Asn Glu Glu Gln Lys Gly Tyr Ala Tyr Gly Ile Gln Ser  
130 135 140

Phe Leu Ala Asn Thr Gly Ala Val Val Ala Ala Ile Leu Pro Phe Val  
145 150 155 160

Phe Ala Tyr Ile Gly Leu Ala Asn Thr Ala Glu Lys Gly Val Val Pro  
165 170 175

Gln Thr Val Val Val Ala Phe Tyr Val Gly Ala Ala Leu Leu Val Ile  
180 185 190

Thr Ser Ala Phe Thr Ile Phe Lys Val Lys Glu Tyr Asn Pro Glu Thr  
195 200 205

Tyr Ala Arg Tyr His Gly Ile Asp Val Ala Ala Asn Gln Glu Lys Ala  
210 215 220

Asn Trp Ile Glu Leu Leu Lys Thr Ala Pro Lys Ala Phe Trp Thr Val  
225 230 235 240

Thr Leu Val Gln Phe Phe Cys Trp Phe Ala Phe Gln Tyr Met Trp Thr  
245 250 255

Tyr Ser Ala Gly Ala Ile Ala Glu Asn Val Trp His Thr Thr Asp Ala  
260 265 270

Ser Ser Val Gly Tyr Gln Glu Ala Gly Asn Trp Tyr Gly Val Leu Ala  
275 280 285

Ala Val Gln Ser Val Ala Ala Val Ile Cys Ser Phe Val Leu Ala Lys  
290 295 300

Val Pro Asn Lys Tyr His Lys Ala Gly Tyr Phe Gly Cys Leu Ala Leu  
305 310 315 320

Gly Ala Leu Gly Phe Phe Ser Val Phe Phe Ile Gly Asn Gln Tyr Ala  
325 330 335

Leu Val Leu Ser Tyr Thr Leu Ile Gly Ile Ala Trp Ala Gly Ile Ile  
                   340                  345                  350  
 Thr Tyr Pro Leu Thr Ile Val Thr Asn Ala Leu Ser Gly Lys His Met  
                   355                  360                  365  
 Gly Thr Tyr Leu Gly Leu Phe Asn Gly Ser Ile Cys Met Pro Gln Ile  
                   370                  375                  380  
 Val Ala Ser Leu Leu Ser Phe Val Leu Phe Pro Met Leu Gly Gly Leu  
                   385                  390                  395                  400  
 Gln Ala Thr Met Phe Leu Val Gly Gly Val Val Leu Leu Leu Gly Ala  
                   405                  410                  415  
 Phe Ser Val Phe Leu Ile Lys Glu Thr His Gly Gly Val  
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<210> 571  
 <211> 612  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 571  
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 tatgtgctgt ccaaccggcg tggtagctgc gtcttcgtgc tggacttggg cgggattgtg 120  
 caggaatttt ccgttttggc agacggcggtg cgcgaaaacc ccgtggtgtc gttcgacgat 180  
 gcggcttcct atgcggacaa tccgtttcag attaacaagc agatagggcg cgtggccgga 240  
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 gcggcagacg gccgacgggt atcccaacga tttggatatt tcctaccgct tggacgagga 420  
 cggccggctt accgttacct atcgcgccac cgcgctcggc gacacggtgt tcgaccgcac 480  
 gctgcacatt tactggcggc tggacgcggg cctgcacgat gcggttctgc atattccgca 540  
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 cgaagtattt ga 612

<210> 572  
 <211> 203  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 572  
 Met Ser Asp Thr Pro Ala Thr Arg Asp Phe Gly Leu Ile Asp Gly Arg  
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 Ala Val Thr Gly Tyr Val Leu Ser Asn Arg Arg Gly Thr Cys Val Phe  
                   20                  25                  30  
 Val Leu Asp Leu Gly Gly Ile Val Gln Glu Phe Ser Val Leu Ala Asp  
                   35                  40                  45  
 Gly Val Arg Glu Asn Pro Val Val Ser Phe Asp Asp Ala Ala Ser Tyr  
                   50                  55                  60

Ala Asp Asn Pro Phe Gln Ile Asn Lys Gln Ile Gly Arg Val Ala Gly  
65 70 75 80

Arg Ile Arg Gly Ala Ala Phe Asp Ile Asn Gly Arg Thr Tyr Arg Val  
85 90 95

Glu Ala Asn Glu Gly Arg Asn Ala Leu His Gly Gly Ser His Gly Leu  
100 105 110

Ala Val Thr Arg Phe Asn Ala Val Ala Ala Asp Gly Arg Arg Leu Ser  
115 120 125

Gln Arg Phe Gly Tyr Phe Leu Pro Leu Gly Arg Gly Arg Pro Ala Tyr  
130 135 140

Arg Tyr Leu Ser Arg His Arg Ala Arg Arg His Gly Val Arg Pro Asp  
145 150 155 160

Ala Ala His Leu Leu Ala Ala Gly Arg Gly Pro Ala Arg Cys Gly Ser  
165 170 175

Ala Tyr Ser Ala Gly Arg Thr Tyr Ser Gly Arg Cys Arg Lys Thr Ala  
180 185 190

Arg Leu Asn Gly Phe Arg Arg Pro Arg Ser Ile  
195 200

<210> 573

<211> 657

<212> DNA

<213> Neisseria meningitidis

<400> 573

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caggaatttt ccgttttggc agacggcggt cgcgaaaacc tcgtggtgtc gttcgatgat 180  
gcggcttcct atgcggacaa tccgtttcag attaacaaac agatagggcg cgtggccgga 240  
cgcatccgcg gtgcggcggt cgacatcaac ggcaggactt accgcgtgga ggccaacgaa 300  
ggcaggaacg cgctgcacgg cggttcgac gggctggcgg ttaccggtt caacgcggtg 360  
gcggcagacg gccgttcggt ggtgctgcgc agccgcctgg caacagtcgg cgcacggtta 420  
tcccaacgat ttggatttgg atatttccta ccgcttggac gaggacgacc ggcttaccgt 480  
tacctatcgc gccaccgcgc tcggcgacac ggtgttcgac ccgacgctgc acatttactg 540  
gcggctggac gcgggcctgc acgatgcggt tctgcatatt ccgcagggcg gacatatgcc 600  
ggccgatgcc gaaaaactgc ccgtctcaac ggtttcagac gacctcgaag tatttga 657

<210> 574

<211> 218

<212> PRT

<213> Neisseria meningitidis

<400> 574

Met Ser Asp Thr Pro Ala Thr Arg Asp Phe Gly Leu Ile Asp Gly Arg  
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Ala Val Thr Gly Tyr Val Leu Ser Asn Arg Arg Gly Thr Arg Val Cys

20

25

30

Val Leu Asp Leu Gly Gly Ile Val Gln Glu Phe Ser Val Leu Ala Asp  
 35 40 45

Gly Val Arg Glu Asn Leu Val Val Ser Phe Asp Asp Ala Ala Ser Tyr  
 50 55 60

Ala Asp Asn Pro Phe Gln Ile Asn Lys Gln Ile Gly Arg Val Ala Gly  
 65 70 75 80

Arg Ile Arg Gly Ala Ala Phe Asp Ile Asn Gly Arg Thr Tyr Arg Val  
 85 90 95

Glu Ala Asn Glu Gly Arg Asn Ala Leu His Gly Gly Ser His Gly Leu  
 100 105 110

Ala Val Thr Arg Phe Asn Ala Val Ala Ala Asp Gly Arg Ser Val Val  
 115 120 125

Leu Arg Ser Arg Leu Ala Thr Val Gly Arg Arg Leu Ser Gln Arg Phe  
 130 135 140

Gly Phe Gly Tyr Phe Leu Pro Leu Gly Arg Gly Arg Pro Ala Tyr Arg  
 145 150 155 160

Tyr Leu Ser Arg His Arg Ala Arg Arg His Gly Val Arg Pro Asp Ala  
 165 170 175

Ala His Leu Leu Ala Ala Gly Arg Gly Pro Ala Arg Cys Gly Ser Ala  
 180 185 190

Tyr Ser Ala Gly Arg Thr Tyr Ala Gly Arg Cys Arg Lys Thr Ala Arg  
 195 200 205

Leu Asn Gly Phe Arg Arg Pro Arg Ser Ile  
 210 215

&lt;210&gt; 575

&lt;211&gt; 656

&lt;212&gt; DNA

&lt;213&gt; Neisseria meningitidis

&lt;400&gt; 575

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 tatgtgctgt ccaaccggcg tggtagcggt gtctgcgtgc tggacttggg cgggattgtg 120  
 caggaatttt ccgttttggc agacggcggtg cgcgaaaacc tcgtggtgtc gttcgacgat 180  
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 cggctggacg cgggcctgca cgatgcggtt ctgcatatc cgcagggcgg acatattccg 600  
 gccgatgccg aaaaactgcc cgtctcaacg gtttcagacg acctcgaagt atttga 656



<210> 576  
<211> 218  
<212> PRT  
<213> Neisseria meningitidis

<400> 576  
Met Ser Asp Thr Pro Ala Thr Arg Asp Phe Gly Leu Ile Asp Gly Arg  
1 5 10 15  
  
Ala Val Thr Gly Tyr Val Leu Ser Asn Arg Arg Gly Thr Arg Val Cys  
20 25 30  
  
Val Leu Asp Leu Gly Gly Ile Val Gln Glu Phe Ser Val Leu Ala Asp  
35 40 45  
  
Gly Val Arg Glu Asn Leu Val Val Ser Phe Asp Asp Ala Ala Ser Tyr  
50 55 60  
  
Ala Asp Asn Pro Phe Gln Ile Asn Lys Gln Ile Gly Arg Val Ala Gly  
65 70 75 80  
  
Arg Ile Arg Gly Ala Ala Phe Asp Ile Asn Gly Arg Thr Tyr Arg Val  
85 90 95  
  
Glu Ala Asn Glu Gly Arg Asn Ala Leu His Gly Gly Ser His Gly Leu  
100 105 110  
  
Ala Val Thr Arg Phe Asn Ala Val Ala Ala Asp Gly Arg Ser Val Val  
115 120 125  
  
Leu Arg Ser Arg Leu Xaa Thr Val Gly Arg Arg Leu Ser Gln Arg Phe  
130 135 140  
  
Gly Phe Gly Tyr Phe Leu Pro Leu Gly Arg Gly Arg Pro Ala Tyr Arg  
145 150 155 160  
  
Tyr Leu Ser Arg His Arg Ala Arg Arg His Gly Val Arg Pro Asp Ala  
165 170 175  
  
Ala His Leu Leu Ala Ala Gly Arg Gly Pro Ala Arg Cys Gly Ser Ala  
180 185 190  
  
Tyr Ser Ala Gly Arg Thr Tyr Ser Gly Arg Cys Arg Lys Thr Ala Arg  
195 200 205  
  
Leu Asn Gly Phe Arg Arg Pro Arg Ser Ile  
210 215

<210> 577  
<211> 639  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 577

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 gtccgtcccg cgccctttga ggcgcgcggc aagcacgtcg aaagaaggcg gcaggataaa 180  
 gataccgaca gcttccggca gcgcgttgcg aacctgcgcc gcgccctgaa cgtcgatttc 240  
 caaaatcacg tcatagcctg ccgcccga cgcattcacg ccctccgtgc ttgtgccgta 300  
 atagttgccg aatacgtctg cgtattccaa aaaagcctcc tgcgcgataa gcgattcaaa 360  
 ctcttctttg gaaacaaagt gataatgtac gccgtttgct tcgccttcac gcggcgggcg 420  
 cgtcgtatgc gacacggaaa cgcgcaaacc gttatggttt gccaacagcc gcgacaccag 480  
 cgtggttttg cccgtgccgg aagcggccga aatgataaag atgttgccct ttcgataagc 540  
 ggacatatatt ttacctgta tattttccaa ccgattgtat cacaacggac accctatttc 600  
 atatttgccg atgcccata tttgcgcgcta ttgttttga 639

<210> 578

<211> 212

<212> PRT

<213> Neisseria gonorrhoeae

<400> 578

Met Lys Gln Ile Pro Leu Arg Leu Leu Gln Val Val Ile Asp His Asp  
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Lys Val Glu Gln Tyr Gly Leu Phe Asp Phe Met Pro Cys Leu Arg Gln  
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Pro Pro Leu Asp Asn Phe Pro Thr Val Arg Pro Ala Pro Phe Glu Ala  
 35 40 45

Arg Gly Lys His Val Glu Arg Arg Arg Gln Asp Lys Asp Thr Asp Ser  
 50 55 60

Phe Arg Gln Arg Val Ala Asn Leu Arg Arg Ala Leu Asn Val Asp Phe  
 65 70 75 80

Gln Asn His Val Ile Ala Cys Arg Arg Gln Arg Ile His Ala Leu Arg  
 85 90 95

Ala Cys Ala Val Ile Val Ala Glu Tyr Val Cys Val Phe Gln Lys Ser  
 100 105 110

Leu Leu Arg Asp Lys Arg Phe Lys Leu Phe Phe Gly Asn Lys Val Ile  
 115 120 125

Met Tyr Ala Val Cys Phe Ala Phe Thr Arg Arg Ala Arg Arg Met Arg  
 130 135 140

His Gly Asn Ala Gln Thr Val Met Val Cys Gln Gln Pro Arg His Gln  
 145 150 155 160

Arg Gly Phe Ala Arg Ala Gly Ser Gly Arg Asn Asp Lys Asp Val Ala  
 165 170 175

Phe Ser Ile Ser Gly His Ile Phe Tyr Leu Tyr Ile Phe Gln Pro Ile  
 180 185 190

Val Ser Gln Arg Thr Pro Tyr Phe Ile Phe Ala Asp Ala His Ile Leu  
 195 200 205

Pro Leu Leu Phe  
210

<210> 579  
<211> 639  
<212> DNA  
<213> Neisseria meningitidis

<400> 579  
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tacggactgc tcgatttcat gccttgccct cgacagcctc ctttgataa cttcccact 120  
gtccgtcccg cgcccggttg ggcgcgcggc aagtacgtcg aaagaaggcg gcaggataaa 180  
gatgccgacg gcttcgggca gcgcgtcgcg aacctgcgcc gcgccctgaa cgtcgatttc 240  
caaaatcacg tcatagcctg ccgccgcaaa cgcattcaca ccctccgcgc ctgtgccgta 300  
atagttgcca aatacgtcgg cgtattccaa aaaagcttcc tgcgcgataa gcgactcaaa 360  
ctcttctttg gaaacaaagt gataatgtac gccgtttgct tcgccttcac gcggcggcg 420  
cgtcgtgtgc gacacggaaa cgcgcaaacc gttatggttt gccaacagcc gcgacaccag 480  
cgtggttttg ccggtgccgg aagcggccga aatgataaag atgttgcctt ttcgataaagc 540  
ggacatattt tttacctgta tttttccag ccgattgtat cacaatggac acccagtttc 600  
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<210> 580  
<211> 212  
<212> PRT  
<213> Neisseria meningitidis

<400> 580  
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Pro Pro Leu Asp Asn Phe Pro Thr Val Arg Pro Ala Ser Val Glu Ala  
35 40 45  
Arg Gly Lys Tyr Val Glu Arg Arg Arg Gln Asp Lys Asp Ala Asp Gly  
50 55 60  
Phe Gly Gln Arg Val Ala Asn Leu Arg Arg Ala Leu Asn Val Asp Phe  
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Gln Asn His Val Ile Ala Cys Arg Arg Gln Arg Ile His Thr Leu Arg  
85 90 95  
Ala Cys Ala Val Ile Val Ala Lys Tyr Val Gly Val Phe Gln Lys Ser  
100 105 110  
Phe Leu Arg Asp Lys Arg Leu Lys Leu Phe Phe Gly Asn Lys Val Ile  
115 120 125  
Met Tyr Ala Val Cys Phe Ala Phe Thr Arg Arg Ala Arg Arg Val Arg  
130 135 140

His Gly Asn Ala Gln Thr Val Met Val Cys Gln Gln Pro Arg His Gln  
 145 150 155 160  
 Arg Gly Phe Ala Arg Ala Gly Ser Gly Arg Asn Asp Lys Asp Val Ala  
 165 170 175  
 Phe Ser Ile Ser Gly His Ile Phe Tyr Leu Tyr Ile Phe Gln Pro Ile  
 180 185 190  
 Val Ser Gln Trp Thr Pro Ser Phe Leu Phe Ala Asp Ala His Ile Leu  
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 Pro Leu Leu Phe  
 210

<210> 581  
 <211> 639  
 <212> DNA  
 <213> Neisseria meningitidis

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 gtccgtcccg cgtccgttga gacgcgcagc aagcacatcg aaagacggcg gcaggataaa 180  
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 cgtgggtttg cccgtgccgg aagcggccga aatgataaag atgttgccct ttcgataagc 540  
 ggacatattt ttacactgta tttttccag ccgattgtat cacaacggac acccggtttc 600  
 ctatttgccg atgcccatat ttgcccgtta ttgttttga 639

<210> 582  
 <211> 212  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 582  
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 20 25 30  
 Pro Pro Leu Asp Asn Phe Pro Thr Val Arg Pro Ala Ser Val Glu Thr  
 35 40 45  
 Arg Ser Lys His Ile Glu Arg Arg Arg Gln Asp Lys Asp Ala Asp Gly  
 50 55 60  
 Phe Gly Gln Arg Ile Ser Asn Leu Ser Arg Ala Leu Asn Val Asp Phe  
 65 70 75 80



Thr Glu Gln Ser Val Gly Leu Glu Thr Val Ser Val Val Gly Lys Ser  
35 40 45

Arg Pro Arg Ala Thr Ser Gly Leu Leu His Thr Ser Thr Ala Ser Asp  
50 55 60

Lys Ile Ile Ser Gly Asp Thr Leu Arg Gln Lys Ala Val Asn Leu Gly  
65 70 75 80

Asp Ala Leu Asp Gly Val Pro Gly Ile His Ala Ser Gln Tyr Gly Gly  
85 90 95

Gly Ala Ser Ala Pro Val Ile Arg Gly Gln Thr Gly Arg Arg Ile Lys  
100 105 110

Val Leu Asn His His Gly Glu Thr Gly Asp Met Ala Asp Phe Ser Pro  
115 120 125

Asp His Ala Ile Met Val Asp Thr Ala Leu Ser Gln Gln Val Glu Ile  
130 135 140

Leu Arg Gly Pro Val Thr Leu Leu Tyr Ser Ser Gly Asn Val Ala Gly  
145 150 155 160

Ala Gly Gln Cys Cys Arg Trp Lys Asn Pro Pro Lys Asn Ala  
165 170

<210> 585  
<211> 2205  
<212> DNA  
<213> Neisseria meningitidis

<400> 585  
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<210> 586  
 <211> 735  
 <212> PRT  
 <213> *Neisseria meningitidis*

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      20              25              30

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      35              40              45

Asn Leu Gly Asp Ala Leu Asp Gly Val Pro Gly Ile His Ala Ser Gln
      50              55              60

Tyr Gly Gly Gly Ala Ser Ala Pro Val Ile Arg Gly Gln Thr Gly Arg
      65              70              75              80

Arg Ile Lys Val Leu Asn His His Gly Glu Thr Gly Asp Met Ala Asp
      85              90              95

Phe Ser Pro Asp His Ala Ile Met Val Asp Thr Ala Leu Ser Gln Gln
      100             105             110

Val Glu Ile Leu Arg Gly Pro Val Thr Leu Leu Tyr Ser Ser Gly Asn
      115             120             125

Val Ala Gly Leu Val Asp Val Ala Asp Gly Lys Ile Pro Glu Lys Met
      130             135             140

Pro Glu Asn Gly Val Ser Gly Glu Leu Gly Leu Arg Leu Ser Ser Gly
      145             150             155             160

Asn Leu Glu Lys Leu Thr Ser Gly Gly Ile Asn Ile Gly Leu Gly Lys
      165             170             175

Asn Phe Val Leu His Thr Glu Gly Leu Tyr Arg Lys Ser Gly Asp Tyr

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180	185	190
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Ala His Ser His Glu Tyr Asp Asp Cys His Ala Asp Ile Ile Trp Gln 245 250 255		
Lys Ser Leu Ile Asn Lys Arg Tyr Leu Gln Leu Tyr Pro His Leu Leu 260 265 270		
Thr Glu Glu Asp Ile Asp Tyr Asp Asn Pro Gly Leu Ser Cys Gly Phe 275 280 285		
His Asp Asp Asp Asn Ala His Ala His Thr His Ser Gly Arg Pro Trp 290 295 300		
Ile Asp Leu Arg Asn Lys Arg Tyr Glu Leu Arg Ala Glu Trp Lys Gln 305 310 315 320		
Pro Phe Pro Gly Phe Glu Ala Leu Arg Val His Leu Asn Arg Asn Asp 325 330 335		
Tyr Arg His Asp Glu Lys Ala Gly Asp Ala Val Glu Asn Phe Phe Asn 340 345 350		
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Arg Leu Lys Gly Ser Trp Gly Val Gln Tyr Leu Gln Gln Lys Ser Ser 370 375 380		
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Asp Asn Phe Thr Leu Glu Gly Gly Val Arg Val Glu Lys Gln Lys Ala 420 425 430		
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His Pro Leu Pro Asp Leu Gly Ala His Arg Gln Thr Ala Arg Ser Phe 450 455 460		
Ala Leu Ser Gly Asn Trp Tyr Phe Thr Pro Gln His Lys Leu Ser Leu 465 470 475 480		
Thr Ala Ser His Gln Glu Arg Leu Pro Ser Thr Gln Glu Leu Tyr Ala		





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<210> 588

<211> 764

<212> PRT

<213> *Neisseria meningitidis*

<400> 588

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Thr Glu Gln Ser Val Gly Leu Glu Thr Val Ser Val Val Gly Lys Ser
      35              40              45

Arg Pro Arg Ala Thr Ser Gly Leu Leu His Thr Ser Thr Ala Ser Asp
      50              55              60

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Gly	Ala	Ser	Ala	Pro	Val	Ile	Arg	Gly	Gln	Thr	Gly	Arg	Arg	Ile	Lys	100	105	110	
Val	Leu	Asn	His	His	Gly	Glu	Thr	Gly	Asp	Met	Ala	Asp	Phe	Ser	Pro	115	120	125	
Asp	His	Ala	Ile	Met	Val	Asp	Ser	Ala	Leu	Ser	Gln	Gln	Val	Glu	Ile	130	135	140	
Leu	Arg	Gly	Pro	Val	Thr	Leu	Leu	Tyr	Ser	Ser	Gly	Asn	Val	Ala	Gly	145	150	155	160
Leu	Val	Asp	Val	Ala	Asp	Gly	Lys	Ile	Pro	Glu	Lys	Met	Pro	Glu	Asn	165	170	175	
Gly	Val	Ser	Gly	Glu	Leu	Gly	Leu	Arg	Leu	Ser	Ser	Gly	Asn	Leu	Glu	180	185	190	
Lys	Leu	Thr	Ser	Gly	Gly	Ile	Asn	Ile	Gly	Leu	Gly	Lys	Asn	Phe	Val	195	200	205	
Leu	His	Thr	Glu	Gly	Leu	Tyr	Arg	Lys	Ser	Gly	Asp	Tyr	Ala	Val	Pro	210	215	220	
Arg	Tyr	Arg	Asn	Leu	Lys	Arg	Leu	Pro	Asp	Ser	His	Ala	Asp	Ser	Gln	225	230	235	240
Thr	Gly	Ser	Ile	Gly	Leu	Ser	Trp	Val	Gly	Glu	Lys	Gly	Phe	Ile	Gly	245	250	255	
Ala	Ala	Tyr	Ser	Asp	Arg	Arg	Asp	Gln	Tyr	Gly	Leu	Pro	Ala	His	Ser	260	265	270	
His	Glu	Tyr	Asp	Asp	Cys	His	Ala	Asp	Ile	Ile	Trp	Gln	Lys	Ser	Leu	275	280	285	
Ile	Asn	Lys	Arg	Tyr	Leu	Gln	Leu	Tyr	Pro	His	Leu	Leu	Thr	Glu	Glu	290	295	300	
Asp	Ile	Asp	Tyr	Asp	Asn	Pro	Gly	Leu	Ser	Cys	Gly	Phe	His	Asp	Asp	305	310	315	320
Asp	Asp	Ala	His	Ala	His	Ala	His	Asn	Gly	Lys	Pro	Trp	Ile	Asp	Leu	325	330	335	
Arg	Asn	Lys	Arg	Tyr	Glu	Leu	Arg	Ala	Glu	Trp	Lys	Gln	Pro	Phe	Pro	340	345	350	
Gly	Phe	Glu	Ala	Leu	Arg	Val	His	Leu	Asn	Arg	Asn	Asp	Tyr	Arg	His	355	360	365	

Asp	Glu	Lys	Ala	Gly	Asp	Ala	Val	Glu	Asn	Phe	Phe	Asn	Asn	Gln	Thr	370	375	380
Gln	Asn	Ala	Arg	Ile	Glu	Leu	Arg	His	Gln	Pro	Ile	Gly	Arg	Leu	Lys	385	390	395
Gly	Ser	Trp	Gly	Val	Gln	Tyr	Leu	Gly	Gln	Lys	Ser	Ser	Ala	Leu	Ser	405	410	415
Ala	Thr	Ser	Glu	Ala	Val	Lys	Gln	Pro	Met	Leu	Leu	Asp	Asn	Lys	Val	420	425	430
Gln	His	Tyr	Ser	Phe	Phe	Gly	Val	Glu	Gln	Ala	Asn	Trp	Asp	Asn	Phe	435	440	445
Thr	Leu	Glu	Gly	Gly	Val	Arg	Val	Glu	Lys	Gln	Lys	Ala	Ser	Ile	Arg	450	455	460
Tyr	Asp	Lys	Ala	Leu	Ile	Asp	Arg	Glu	Asn	Tyr	Tyr	Asn	His	Pro	Leu	465	470	475
Pro	Asp	Leu	Gly	Ala	His	Arg	Gln	Thr	Ala	Arg	Ser	Phe	Ala	Leu	Ser	485	490	495
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His	Gln	Glu	Arg	Leu	Pro	Ser	Thr	Gln	Glu	Leu	Tyr	Ala	His	Gly	Lys	515	520	525
His	Val	Ala	Thr	Asn	Thr	Phe	Glu	Val	Gly	Asn	Lys	His	Leu	Asn	Lys	530	535	540
Glu	Arg	Ser	Asn	Asn	Ile	Glu	Leu	Ala	Leu	Gly	Tyr	Glu	Gly	Asp	Arg	545	550	555
Trp	Gln	Tyr	Asn	Leu	Ala	Leu	Tyr	Arg	Asn	Arg	Phe	Gly	Asn	Tyr	Ile	565	570	575
Tyr	Ala	Gln	Thr	Leu	Asn	Asp	Gly	Arg	Gly	Pro	Lys	Ser	Ile	Glu	Asp	580	585	590
Asp	Ser	Glu	Met	Lys	Leu	Val	Arg	Tyr	Asn	Gln	Ser	Gly	Ala	Asp	Phe	595	600	605
Tyr	Gly	Ala	Glu	Gly	Glu	Ile	Tyr	Phe	Lys	Pro	Thr	Pro	Arg	Tyr	Arg	610	615	620
Ile	Gly	Val	Ser	Gly	Asp	Tyr	Val	Arg	Gly	Arg	Leu	Lys	Asn	Leu	Pro	625	630	635
Ser	Leu	Pro	Gly	Arg	Glu	Asp	Ala	Tyr	Gly	Asn	Arg	Pro	Leu	Ile	Ala	645	650	655
Gln	Ala	Asp	Gln	Asn	Ala	Pro	Arg	Val	Pro	Ala	Ala	Arg	Leu	Gly	Val	660	665	670

His Leu Lys Ala Ser Leu Thr Asp Arg Ile Asp Ala Asn Leu Asp Tyr  
675 680 685

Tyr Arg Val Phe Ala Gln Asn Lys Leu Ala Arg Tyr Glu Thr Arg Thr  
690 695 700

Pro Gly His His Met Leu Asn Leu Gly Ala Asn Tyr Arg Arg Asn Thr  
705 710 715 720

Arg Tyr Gly Glu Trp Asn Trp Tyr Val Lys Ala Asp Asn Leu Leu Asn  
725 730 735

Gln Ser Val Tyr Ala His Ser Ser Phe Leu Ser Asp Thr Pro Gln Met  
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Gly Arg Ser Phe Thr Gly Gly Val Asn Val Lys Phe  
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<211> 600

<212> DNA

<213> Neisseria gonorrhoeae

<400> 589

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<210> 590

<211> 199

<212> PRT

<213> Neisseria gonorrhoeae

<400> 590

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20 25 30

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35 40 45

Gln Ser Ala Glu Tyr Phe Arg Leu Leu Val Asp Leu Leu Val Tyr Arg  
50 55 60

Tyr Met Asp Gln Lys Ile Asp Ile Val Ala Gly Leu Asp Ala Arg Gly

65	70	75	80
Phe Ile Ile Gly Ala Ala Leu Ala Tyr Gln Leu Asn Val Gly Phe Val	85	90	95
Pro Ile Arg Lys Lys Gly Lys Leu Pro Phe Glu Thr Val Ser Gln Ser	100	105	110
Tyr Ala Leu Glu Tyr Gly Glu Ala Ala Val Glu Ile His Thr Asp Ala	115	120	125
Val Lys Pro Gly Ser Arg Val Leu Leu Val Asp Asp Leu Val Ala Thr	130	135	140
Gly Gly Thr Met Leu Ala Gly Leu Glu Leu Ile Arg Lys Leu Gly Gly	145	150	155
Glu Ile Val Glu Ala Ala Ala Ile Leu Glu Phe Thr Asp Leu Gln Gly	165	170	175
Gly Lys Asn Ile Arg Ala Ser Gly Ala Pro Leu Phe Thr Leu Leu Gln	180	185	190
Asn Glu Gly Cys Met Lys Gly	195		

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 <212> DNA  
 <213> Neisseria meningitidis

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 aaaggcaagc tgccttttga aaccgtatcg caaagctacg cgctcgaata cggggaagct 360  
 gcggtggaaa tccacaccga tgccgtcaaa ctcggttcgc gcgtgctgct ggtcgatgat 420  
 ttgattgcca cgggcggcac gatgcttgcc ggactggaac tgatccgcaa actcggcgga 480  
 gaaattgtcg aagccgcgcg cattttggaa ttaccgacc ttcaaggcgg caagaatatc 540  
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<210> 592  
 <211> 199  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 592
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Glu Ala Met Ser Val Gly Ala Leu Ala Asp Lys Ile Arg Lys Ile Glu
20 25 30

Asn Trp Pro Gln Lys Gly Ile Leu Phe His Asp Ile Thr Pro Val Leu  
 35 40 45  
 Gln Ser Ala Glu Tyr Phe Arg Leu Leu Val Asp Leu Leu Val Tyr Arg  
 50 55 60  
 Tyr Met Asp Gln Lys Ile Asp Ile Val Ala Gly Leu Asp Ala Arg Gly  
 65 70 75 80  
 Phe Ile Ile Gly Ala Ala Leu Ala Tyr Gln Leu Asn Val Gly Phe Val  
 85 90 95  
 Pro Ile Arg Lys Lys Gly Lys Leu Pro Phe Glu Thr Val Ser Gln Ser  
 100 105 110  
 Tyr Ala Leu Glu Tyr Gly Glu Ala Ala Val Glu Ile His Thr Asp Ala  
 115 120 125  
 Val Lys Leu Gly Ser Arg Val Leu Leu Val Asp Asp Leu Ile Ala Thr  
 130 135 140  
 Gly Gly Thr Met Leu Ala Gly Leu Glu Leu Ile Arg Lys Leu Gly Gly  
 145 150 155 160  
 Glu Ile Val Glu Ala Ala Ala Ile Leu Glu Phe Thr Asp Leu Gln Gly  
 165 170 175  
 Gly Lys Asn Ile Arg Ala Ser Gly Ala Pro Leu Phe Thr Leu Leu Gln  
 180 185 190  
 Asn Glu Gly Cys Met Lys Gly  
 195

<210> 593  
 <211> 600  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 593  
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 ttccacgaca tcacgcccgt cctgcaaagc gcggaatact tccgactttt ggttgattta 180  
 ttggtttacc gctatatgga tcagaaaatc gacatcgttg ccggttttga cgcgcgcggc 240  
 ttcattatcg gcgcggcact cgcctaccag ctcaacgtcg gtttcgtccc catccgcaaa 300  
 aaaggcaagc tgccttttga aaccgtatcg caaagctacg cgctcgaata cggggaagct 360  
 gcggttgaaa tccacaccga tgccgtcaaa ctcggttcgc gcgtgctgct ggtcgatgat 420  
 ttggttgcca cgggcggcac gatgcttgcc ggactggagc tgatccgcaa actcggcggg 480  
 gaaattgtcg aagccgcgcg catttttgaa ttaccgacc ttcaaggcgg caagaatatc 540  
 cgtgcaagcg gcgcgcctt atttaccctg cttcaaaacg aaggctgtat gaagggtga 600

<210> 594  
 <211> 199  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 594

Met Ala Leu Lys Thr Ser Asn Leu Glu His Ala Met Leu Val His Pro  
1 5 10 15

Glu Ala Met Ser Val Gly Ala Leu Ala Asp Lys Ile Arg Lys Ile Glu  
20 25 30

Asn Trp Pro Gln Lys Gly Ile Leu Phe His Asp Ile Thr Pro Val Leu  
35 40 45

Gln Ser Ala Glu Tyr Phe Arg Leu Leu Val Asp Leu Leu Val Tyr Arg  
50 55 60

Tyr Met Asp Gln Lys Ile Asp Ile Val Ala Gly Leu Asp Ala Arg Gly  
65 70 75 80

Phe Ile Ile Gly Ala Ala Leu Ala Tyr Gln Leu Asn Val Gly Phe Val  
85 90 95

Pro Ile Arg Lys Lys Gly Lys Leu Pro Phe Glu Thr Val Ser Gln Ser  
100 105 110

Tyr Ala Leu Glu Tyr Gly Glu Ala Ala Val Glu Ile His Thr Asp Ala  
115 120 125

Val Lys Leu Gly Ser Arg Val Leu Leu Val Asp Asp Leu Val Ala Thr  
130 135 140

Gly Gly Thr Met Leu Ala Gly Leu Glu Leu Ile Arg Lys Leu Gly Gly  
145 150 155 160

Glu Ile Val Glu Ala Ala Ala Ile Leu Glu Phe Thr Asp Leu Gln Gly  
165 170 175

Gly Lys Asn Ile Arg Ala Ser Gly Ala Pro Leu Phe Thr Leu Leu Gln  
180 185 190

Asn Glu Gly Cys Met Lys Gly  
195

<210> 595

<211> 1020

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 595

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gacaaagcat tgattgatcg agaaaactac tacaaccagc ccctgccgga cctcggcgcg 180  
caccgcaaaa ccgcccgcctc gttcgcaact tcgggcaact ggtattttcac gccacaccac 240  
aaactcagcc tgaccgcctc ccatcaggaa cgctgcccgt caacgcaaga actgtacgca 300  
cacggcaagc acgtcgccac caacaccttt gaagtcggca acaaacacct caacaaagag 360  
cgttccaaca atatcgaact cgcgctgggc taaaaggcg accgctggca atacaatctg 420  
gcagcctacc gcaaccgatt cggcaactac atttacgccc aaaccttaaa cgacggacgc 480  
ggccccaat ccacgaaga cgacagcgaa atgaagctcg tgcgctacaa ccaatccggt 540  
gccgacttct acggcgcgga aggcgaaatc tacttcaaac cgacaccgcg ctaccgcac 600



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ggtgtttccg gcgactatgt acgaggccgt ctgaaaaacc tgccgtccct acccggcagg 660
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ccggctgcgc gcctcggtt ccacctgaaa acctcgctaa ccgaccgtat cgatgccaat 780
ttggactact accgcgtgtt cgcccaaaac aaactcgccc gctacgaaac gcgtacgccc 840
ggacaccata tgctcaacct cggtgcaaac taccgccgca atacgcgcta tggcgagtgg 900
aattggtacg tcaaagccga caacctgctc aaccaatccg tttagcccca cagcagcttc 960
ctctctgata cgccgcaaat gggccgcagc tttgccggcg gcgtaaactt gaagttttaa 1020

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<210> 596

<211> 339

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 596

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Met Leu Ile Asp Asn Asn Val Arg His Tyr Ser Phe Phe Gly Val Glu
  1             5             10             15

Gln Ala Asn Trp Asp Asn Phe Thr Leu Glu Gly Gly Val Arg Val Glu
      20             25             30

Lys Gln Lys Ala Ser Ile Arg Tyr Asp Lys Ala Leu Ile Asp Arg Glu
      35             40             45

Asn Tyr Tyr Asn Gln Pro Leu Pro Asp Leu Gly Ala His Arg Gln Thr
      50             55             60

Ala Arg Ser Phe Ala Leu Ser Gly Asn Trp Tyr Phe Thr Pro His His
      65             70             75             80

Lys Leu Ser Leu Thr Ala Ser His Gln Glu Arg Leu Pro Ser Thr Gln
      85             90             95

Glu Leu Tyr Ala His Gly Lys His Val Ala Thr Asn Thr Phe Glu Val
      100            105            110

Gly Asn Lys His Leu Asn Lys Glu Arg Ser Asn Asn Ile Glu Leu Ala
      115            120            125

Leu Gly Tyr Lys Gly Asp Arg Trp Gln Tyr Asn Leu Ala Ala Tyr Arg
      130            135            140

Asn Arg Phe Gly Asn Tyr Ile Tyr Ala Gln Thr Leu Asn Asp Gly Arg
      145            150            155            160

Gly Pro Lys Ser Ile Glu Asp Asp Ser Glu Met Lys Leu Val Arg Tyr
      165            170            175

Asn Gln Ser Gly Ala Asp Phe Tyr Gly Ala Glu Gly Glu Ile Tyr Phe
      180            185            190

Lys Pro Thr Pro Arg Tyr Arg Ile Gly Val Ser Gly Asp Tyr Val Arg
      195            200            205

Gly Arg Leu Lys Asn Leu Pro Ser Leu Pro Gly Arg Glu Asp Pro Tyr
      210            215            220

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Gly Lys Arg Pro Phe Ile Ala Gln Ala Asp Gln Asn Ala Pro Arg Ile  
 225 230 235 240  
 Pro Ala Ala Arg Leu Gly Phe His Leu Lys Thr Ser Leu Thr Asp Arg  
 245 250 255  
 Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln Asn Lys Leu  
 260 265 270  
 Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu Asn Leu Gly  
 275 280 285  
 Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn Trp Tyr Val  
 290 295 300  
 Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His Ser Ser Phe  
 305 310 315 320  
 Leu Ser Asp Thr Pro Gln Met Gly Arg Ser Phe Ala Gly Gly Val Asn  
 325 330 335

Val Lys Phe

<210> 597  
 <211> 1020  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 597  
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 gacaaagcat tgattgatcg ggaaaactac tacaaccacc ccctgcccgga cctcggcgcg 180  
 caccgccaaa ccgcccgcctc attcgcactt tcgggcaact ggtatttcac gccacaacac 240  
 aaactcagcc tgaccgcctc ccatcaggaa cgctgcccgt caacgcaaga gctgtacgca 300  
 cacggcaaac acgtcgccac caacaccttt gaagtcggca acaaacacct caacaaagag 360  
 cgttccaaca atatcgaaact cgcgctgggc tacgaaggcg accgctggca atacaatctg 420  
 gcaacttacc gcaaccgctt cggttaactac atttacgccc aaaccttaaa cgacggacgc 480  
 ggcccaaat ccatcgaaga cgacagcgaa atgaagctcg tgcgtacaa ccaatccggc 540  
 gccgacttct acggcgcgga aggcgaaatc tacttcaaac cgacaccgcg ctaccgcac 600  
 ggcgtttccg gcgactatgt acgaggcgt ctgaaaaacc tgccttcct acccggcaga 660  
 gaagatgcct acggcaaccg tcctttcatc gcacaggacg accaaaatgc ccccggtgtt 720  
 ccggctgcgc gcctcggtt ccacctgaaa gcctcgctga ccgaccgtat cgatgccaat 780  
 ttggactact accgctgtt cgcccaaac aaactcgccc gctacgaaac gcgcacgccc 840  
 ggacaccata tgctcaacct cggcgcaaac taccgcccga atacgcgcta tggcgagtgg 900  
 aattggtacg tcaaagccga caacctgctc aaccaatccg tttacgcca cagcagcttt 960  
 ctctctgata cgccgcaaat gggccgcagc tttaccggcg gcgtgaacgt gaagttttta 1020

<210> 598  
 <211> 339  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 598  
 Met Leu Leu Asp Asn Lys Val Gln His Tyr Ser Phe Phe Gly Val Glu

1	5	10	15
Gln Ala Asn Trp Asp Asn Phe Thr Leu Glu Gly Gly Val Arg Val Glu	20	25	30
Lys Gln Lys Ala Ser Ile Gln Tyr Asp Lys Ala Leu Ile Asp Arg Glu	35	40	45
Asn Tyr Tyr Asn His Pro Leu Pro Asp Leu Gly Ala His Arg Gln Thr	50	55	60
Ala Arg Ser Phe Ala Leu Ser Gly Asn Trp Tyr Phe Thr Pro Gln His	65	70	75
Lys Leu Ser Leu Thr Ala Ser His Gln Glu Arg Leu Pro Ser Thr Gln	85	90	95
Glu Leu Tyr Ala His Gly Lys His Val Ala Thr Asn Thr Phe Glu Val	100	105	110
Gly Asn Lys His Leu Asn Lys Glu Arg Ser Asn Asn Ile Glu Leu Ala	115	120	125
Leu Gly Tyr Glu Gly Asp Arg Trp Gln Tyr Asn Leu Ala Leu Tyr Arg	130	135	140
Asn Arg Phe Gly Asn Tyr Ile Tyr Ala Gln Thr Leu Asn Asp Gly Arg	145	150	155
Gly Pro Lys Ser Ile Glu Asp Asp Ser Glu Met Lys Leu Val Arg Tyr	165	170	175
Asn Gln Ser Gly Ala Asp Phe Tyr Gly Ala Glu Gly Glu Ile Tyr Phe	180	185	190
Lys Pro Thr Pro Arg Tyr Arg Ile Gly Val Ser Gly Asp Tyr Val Arg	195	200	205
Gly Arg Leu Lys Asn Leu Pro Ser Leu Pro Gly Arg Glu Asp Ala Tyr	210	215	220
Gly Asn Arg Pro Phe Ile Ala Gln Asp Asp Gln Asn Ala Pro Arg Val	225	230	235
Pro Ala Ala Arg Leu Gly Phe His Leu Lys Ala Ser Leu Thr Asp Arg	245	250	255
Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln Asn Lys Leu	260	265	270
Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu Asn Leu Gly	275	280	285
Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn Trp Tyr Val	290	295	300
Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His Ser Ser Phe			

305 310 315 320

Leu Ser Asp Thr Pro Gln Met Gly Arg Ser Phe Thr Gly Gly Val Asn  
325 330 335

Val Lys Phe

<210> 599  
<211> 1020  
<212> DNA  
<213> *Neisseria meningitidis*

<400> 599  
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gacaaagcat tgattgatcg ggaaaactac tacaaccatc cctgcccga cctcggcgcg 180  
caccgccaaa ccgcccgctc attcgcaact tcggggcaact ggtatttcac gccacaacac 240  
aaactcagcc tgaccgcctc ccatcaggaa cgcttgccgt caacgcaaga gctgtacgca 300  
cacggcaaac acgtcgccac caacaccttt gaagtcggca acaaacacct caacaaagag 360  
cgttccaaca atatcgaact cgcgctgggc tacgaaggcg accgctggca atacaatctg 420  
gcactctacc gcaaccgctt cggcaactac atttacgccc aaaccttaaa cgacggacgc 480  
ggccccc aaat ccacgaaga cgacagcgaa atgaagctcg tgcgctacaa ccaatccggg 540  
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gaagacgcct acggcaaccg cccactcatt gcccaagccg accaaaacgc ccctcgcggt 720  
ccggtgcgc gcctcggcgt ccacctgaaa gcctcgctga ccgaccgcac cgatgccaat 780  
ttggactact accgctgtgt cgcacaaaac aaactcgccc gctacgaaac gcgcacgccc 840  
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aattggtacg tcaaagccga caacdtgctc aaccaatccg ttacgcccc cagcagcttc 960  
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<210> 600  
<211> 339  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 600  
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Gln Ala Asn Trp Asp Asn Phe Thr Leu Glu Gly Gly Val Arg Val Glu  
20 25 30  
Lys Gln Lys Ala Ser Ile Arg Tyr Asp Lys Ala Leu Ile Asp Arg Glu  
35 40 45  
Asn Tyr Tyr Asn His Pro Leu Pro Asp Leu Gly Ala His Arg Gln Thr  
50 55 60  
Ala Arg Ser Phe Ala Leu Ser Gly Asn Trp Tyr Phe Thr Pro Gln His  
65 70 75 80  
Lys Leu Ser Leu Thr Ala Ser His Gln Glu Arg Leu Pro Ser Thr Gln  
85 90 95

Glu Leu Tyr Ala His Gly Lys His Val Ala Thr Asn Thr Phe Glu Val  
 100 105 110  
 Gly Asn Lys His Leu Asn Lys Glu Arg Ser Asn Asn Ile Glu Leu Ala  
 115 120 125  
 Leu Gly Tyr Glu Gly Asp Arg Trp Gln Tyr Asn Leu Ala Leu Tyr Arg  
 130 135 140  
 Asn Arg Phe Gly Asn Tyr Ile Tyr Ala Gln Thr Leu Asn Asp Gly Arg  
 145 150 155 160  
 Gly Pro Lys Ser Ile Glu Asp Asp Ser Glu Met Lys Leu Val Arg Tyr  
 165 170 175  
 Asn Gln Ser Gly Ala Asp Phe Tyr Gly Ala Glu Gly Glu Ile Tyr Phe  
 180 185 190  
 Lys Pro Thr Pro Arg Tyr Arg Ile Gly Val Ser Gly Asp Tyr Val Arg  
 195 200 205  
 Gly Arg Leu Lys Asn Leu Pro Ser Leu Pro Gly Arg Glu Asp Ala Tyr  
 210 215 220  
 Gly Asn Arg Pro Leu Ile Ala Gln Ala Asp Gln Asn Ala Pro Arg Val  
 225 230 235 240  
 Pro Ala Ala Arg Leu Gly Val His Leu Lys Ala Ser Leu Thr Asp Arg  
 245 250 255  
 Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln Asn Lys Leu  
 260 265 270  
 Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu Asn Leu Gly  
 275 280 285  
 Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn Trp Tyr Val  
 290 295 300  
 Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His Ser Ser Phe  
 305 310 315 320  
 Leu Ser Asp Thr Pro Gln Met Gly Arg Ser Phe Thr Gly Gly Val Asn  
 325 330 335  
 Val Lys Phe

<210> 601  
 <211> 2277  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 601

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<210> 602

<211> 758

<212> PRT

<213> Neisseria gonorrhoeae

<400> 602

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Asn Thr Pro Leu Leu Ala Gln Ala His Glu Thr Glu Gln Ser Val Gly
  20               25              30

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Leu Glu Thr Val Ser Val Val Gly Lys Ser Arg Pro Arg Ala Thr Ser
  35               40              45

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Gly Leu Leu His Thr Ser Thr Ala Ser Asp Lys Ile Ile Ser Gly Asp
  50               55              60

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Thr	Leu	Arg	Gln	Lys	Ala	Val	Asn	Leu	Gly	Asp	Ala	Leu	Asp	Gly	Val	65	70	75	80
Pro	Gly	Ile	His	Ala	Ser	Gln	Tyr	Gly	Gly	Gly	Ala	Ser	Ala	Pro	Val	85	90	95	
Ile	Arg	Gly	Gln	Thr	Gly	Arg	Arg	Ile	Lys	Val	Leu	Asn	His	His	Gly	100	105	110	
Glu	Thr	Gly	Asp	Met	Ala	Asp	Phe	Ser	Pro	Asp	His	Ala	Ile	Met	Val	115	120	125	
Asp	Thr	Ala	Leu	Ser	Gln	Gln	Val	Glu	Ile	Leu	Arg	Gly	Pro	Val	Thr	130	135	140	
Leu	Leu	Tyr	Ser	Ser	Gly	Asn	Val	Ala	Gly	Leu	Val	Asp	Val	Ala	Asp	145	150	155	160
Gly	Lys	Ile	Pro	Glu	Lys	Met	Pro	Glu	Asn	Gly	Val	Ser	Gly	Glu	Ala	165	170	175	
Gly	Leu	Arg	Leu	Ser	Ser	Gly	Asn	Leu	Glu	Lys	Leu	Thr	Ser	Ala	Gly	180	185	190	
Ile	Asn	Ile	Gly	Leu	Gly	Lys	Asn	Phe	Val	Leu	His	Thr	Glu	Gly	Leu	195	200	205	
Tyr	Arg	Lys	Ser	Gly	Asp	Tyr	Ala	Val	Pro	Arg	Tyr	Arg	Asn	Leu	Lys	210	215	220	
Arg	Leu	Pro	Asp	Ser	His	Ala	Asp	Ser	Gln	Thr	Gly	Ser	Ile	Gly	Leu	225	230	235	240
Ser	Trp	Val	Gly	Glu	Lys	Gly	Phe	Ile	Gly	Ala	Ala	Tyr	Ser	Asp	Arg	245	250	255	
Arg	Asp	Arg	Tyr	Gly	Leu	Pro	Ala	His	Ser	His	Glu	Tyr	Asp	Asp	Cys	260	265	270	
His	Ala	Asp	Ile	Ile	Trp	Gln	Lys	Ser	Leu	Ile	Asn	Lys	Arg	Tyr	Leu	275	280	285	
Gln	Leu	Tyr	Pro	His	Leu	Leu	Thr	Glu	Glu	Asp	Ile	Asp	Tyr	Asp	Asn	290	295	300	
Pro	Gly	Leu	Ser	Cys	Gly	Phe	His	Asp	Gly	Asp	Gly	Ala	His	Ala	His	305	310	315	320
Thr	His	Asn	Gly	Lys	Pro	Trp	Ile	Asp	Leu	Arg	Asn	Lys	Arg	Tyr	Glu	325	330	335	
Leu	Arg	Ala	Glu	Trp	Lys	Gln	Pro	Phe	Pro	Gly	Phe	Glu	Ala	Leu	Arg	340	345	350	
Val	His	Leu	Asn	Arg	Asn	Asp	Tyr	His	His	Asp	Glu	Lys	Ala	Gly	Asp	355	360	365	

Ala	Val	Glu	Asn	Phe	Phe	Asn	Asn	Lys	Thr	His	Asn	Ala	Arg	Ile	Glu	370	375	380
Leu	Arg	His	Gln	Pro	Ile	Gly	Arg	Leu	Lys	Gly	Ser	Trp	Gly	Val	Gln	385	390	395
Tyr	Leu	Gly	Gln	Lys	Ser	Ser	Ala	Leu	Ser	Ala	Ile	Pro	Glu	Thr	Val	405	410	415
Gln	Gln	Pro	Met	Leu	Ile	Asp	Asn	Asn	Val	Arg	His	Tyr	Ser	Phe	Phe	420	425	430
Gly	Val	Glu	Gln	Ala	Asn	Trp	Asp	Asn	Phe	Thr	Leu	Glu	Gly	Gly	Val	435	440	445
Arg	Val	Glu	Lys	Gln	Lys	Ala	Ser	Ile	Arg	Tyr	Asp	Lys	Ala	Leu	Ile	450	455	460
Asp	Arg	Glu	Asn	Tyr	Tyr	Asn	Gln	Pro	Leu	Pro	Asp	Leu	Gly	Ala	His	465	470	475
Arg	Gln	Thr	Ala	Arg	Ser	Phe	Ala	Leu	Ser	Gly	Asn	Trp	Tyr	Phe	Thr	485	490	495
Pro	His	His	Lys	Leu	Ser	Leu	Thr	Ala	Ser	His	Gln	Glu	Arg	Leu	Pro	500	505	510
Ser	Thr	Gln	Glu	Leu	Tyr	Ala	His	Gly	Lys	His	Val	Ala	Thr	Asn	Thr	515	520	525
Phe	Glu	Val	Gly	Asn	Lys	His	Leu	Asn	Lys	Glu	Arg	Ser	Asn	Asn	Ile	530	535	540
Glu	Leu	Ala	Leu	Gly	Tyr	Glu	Gly	Asp	Arg	Trp	Gln	Tyr	Asn	Leu	Ala	545	550	555
Ala	Tyr	Arg	Asn	Arg	Phe	Gly	Asn	Tyr	Ile	Tyr	Ala	Gln	Thr	Leu	Asn	565	570	575
Asp	Gly	Arg	Gly	Pro	Lys	Ser	Ile	Glu	Asp	Asp	Ser	Glu	Met	Lys	Leu	580	585	590
Val	Arg	Tyr	Asn	Gln	Ser	Gly	Ala	Asp	Phe	Tyr	Gly	Ala	Glu	Gly	Glu	595	600	605
Ile	Tyr	Phe	Lys	Pro	Thr	Pro	Arg	Tyr	Arg	Ile	Gly	Val	Ser	Gly	Asp	610	615	620
Tyr	Val	Arg	Gly	Arg	Leu	Lys	Asn	Leu	Pro	Ser	Leu	Pro	Gly	Arg	Glu	625	630	635
Asp	Pro	Tyr	Gly	Lys	Arg	Pro	Phe	Ile	Ala	Gln	Ala	Asp	Gln	Asn	Ala	645	650	655
Pro	Arg	Ile	Pro	Ala	Ala	Arg	Leu	Gly	Phe	His	Leu	Lys	Thr	Ser	Leu	660	665	670



Thr Asp Arg Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln  
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 Asn Lys Leu Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu  
 690 695 700  
 Asn Leu Gly Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn  
 705 710 715 720  
 Trp Tyr Val Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His  
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 Gly Val Asn Val Lys Phe  
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 <211> 2277  
 <212> DNA  
 <213> Neisseria meningitidis

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 aaaagccggtc cgcgcgccac gtcggggctg ttgcacactt cgaccgcctc cgacaaaatc 180  
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 gattacgaca atccgggctt gagctgcggc ttccacgacg acgataatgc acacgcacac 960  
 acccacagcg gcagaccgtg gatagacctg cgcaacaaac gctacgaact ccgtgccgaa 1020  
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 cccaaatcca tcgaagacga cagcgaaatg aagctcgtgc gctacaacca atccggcgcc 1800  
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gctgcgcgcc tcggcttcca cctgaaagcc tcgctgaccg accgtatcga tgccaatttg 2040
gactactacc gcgtgttcgc ccaaaacaaa ctgcccgcgt acgaaacgcg cagccccgga 2100
caccatatgc tcaacctcgg cgaaaactac cgccgcaata cgcgctatgg cgagtggaa 2160
tggtacgtca aagccgacaa cctgctcaac caatccgttt acgcccacag cagctttctc 2220
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<210> 604  
 <211> 758  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 604

Met	Ala	Gln	Thr	Thr	Leu	Lys	Pro	Ile	Val	Leu	Ser	Ile	Leu	Leu	Ile	1	5	10	15
Asn	Thr	Pro	Leu	Leu	Ala	Gln	Ala	His	Glu	Thr	Glu	Gln	Ser	Val	Asp	20	25	30	
Leu	Glu	Thr	Val	Ser	Val	Val	Gly	Lys	Ser	Arg	Pro	Arg	Ala	Thr	Ser	35	40	45	
Gly	Leu	Leu	His	Thr	Ser	Thr	Ala	Ser	Asp	Lys	Ile	Ile	Ser	Gly	Asp	50	55	60	
Thr	Leu	Arg	Gln	Lys	Ala	Val	Asn	Leu	Gly	Asp	Ala	Leu	Asp	Gly	Val	65	70	75	80
Pro	Gly	Ile	His	Ala	Ser	Gln	Tyr	Gly	Gly	Gly	Ala	Ser	Ala	Pro	Val	85	90	95	
Ile	Arg	Gly	Gln	Thr	Gly	Arg	Arg	Ile	Lys	Val	Leu	Asn	His	His	Gly	100	105	110	
Glu	Thr	Gly	Asp	Met	Ala	Asp	Phe	Ser	Pro	Asp	His	Ala	Ile	Met	Val	115	120	125	
Asp	Thr	Ala	Leu	Ser	Gln	Gln	Val	Glu	Ile	Leu	Arg	Gly	Pro	Val	Thr	130	135	140	
Leu	Leu	Tyr	Ser	Ser	Gly	Asn	Val	Ala	Gly	Leu	Val	Asp	Val	Ala	Asp	145	150	155	160
Gly	Lys	Ile	Pro	Glu	Lys	Met	Pro	Glu	Asn	Gly	Val	Ser	Gly	Glu	Leu	165	170	175	
Gly	Leu	Arg	Leu	Ser	Ser	Gly	Asn	Leu	Glu	Lys	Leu	Thr	Ser	Gly	Gly	180	185	190	
Ile	Asn	Ile	Gly	Leu	Gly	Lys	Asn	Phe	Val	Leu	His	Thr	Glu	Gly	Leu	195	200	205	
Tyr	Arg	Lys	Ser	Gly	Asp	Tyr	Ala	Val	Pro	Arg	Tyr	Arg	Asn	Leu	Lys	210	215	220	

Arg Leu Pro Asp Ser His Ala Asp Ser Gln Thr Gly Ser Ile Gly Leu  
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 Ser Trp Val Gly Glu Lys Gly Phe Ile Gly Val Ala Tyr Ser Asp Arg  
 245 250 255  
 Arg Asp Gln Tyr Gly Leu Pro Ala His Ser His Glu Tyr Asp Asp Cys  
 260 265 270  
 His Ala Asp Ile Ile Trp Gln Lys Ser Leu Ile Asn Lys Arg Tyr Leu  
 275 280 285  
 Gln Leu Tyr Pro His Leu Leu Thr Glu Glu Asp Ile Asp Tyr Asp Asn  
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 Pro Gly Leu Ser Cys Gly Phe His Asp Asp Asp Asn Ala His Ala His  
 305 310 315 320  
 Thr His Ser Gly Arg Pro Trp Ile Asp Leu Arg Asn Lys Arg Tyr Glu  
 325 330 335  
 Leu Arg Ala Glu Trp Lys Gln Pro Phe Pro Gly Phe Glu Ala Leu Arg  
 340 345 350  
 Val His Leu Asn Arg Asn Asp Tyr Arg His Asp Glu Lys Ala Gly Asp  
 355 360 365  
 Ala Val Glu Asn Phe Phe Asn Asn Gln Thr Gln Asn Ala Arg Ile Glu  
 370 375 380  
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 385 390 395 400  
 Tyr Leu Gln Gln Lys Ser Ser Ala Leu Ser Ala Ile Ser Glu Ala Val  
 405 410 415  
 Lys Gln Pro Met Leu Leu Asp Asn Lys Val Gln His Tyr Ser Phe Phe  
 420 425 430  
 Gly Val Glu Gln Ala Asn Trp Asp Asn Phe Thr Leu Glu Gly Gly Val  
 435 440 445  
 Arg Val Glu Lys Gln Lys Ala Ser Ile Gln Tyr Asp Lys Ala Leu Ile  
 450 455 460  
 Asp Arg Glu Asn Tyr Tyr Asn His Pro Leu Pro Asp Leu Gly Ala His  
 465 470 475 480  
 Arg Gln Thr Ala Arg Ser Phe Ala Leu Ser Gly Asn Trp Tyr Phe Thr  
 485 490 495  
 Pro Gln His Lys Leu Ser Leu Thr Ala Ser His Gln Glu Arg Leu Pro  
 500 505 510  
 Ser Thr Gln Glu Leu Tyr Ala His Gly Lys His Val Ala Thr Asn Thr  
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Phe Glu Val Gly Asn Lys His Leu Asn Lys Glu Arg Ser Asn Asn Ile  
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 Glu Leu Ala Leu Gly Tyr Glu Gly Asp Arg Trp Gln Tyr Asn Leu Ala  
 545 550 555 560  
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 Asp Gly Arg Gly Pro Lys Ser Ile Glu Asp Asp Ser Glu Met Lys Leu  
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 Val Arg Tyr Asn Gln Ser Gly Ala Asp Phe Tyr Gly Ala Glu Gly Glu  
 595 600 605  
 Ile Tyr Phe Lys Pro Thr Pro Arg Tyr Arg Ile Gly Val Ser Gly Asp  
 610 615 620  
 Tyr Val Arg Gly Arg Leu Lys Asn Leu Pro Ser Leu Pro Gly Arg Glu  
 625 630 635 640  
 Asp Ala Tyr Gly Asn Arg Pro Phe Ile Ala Gln Asp Asp Gln Asn Ala  
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 Pro Arg Val Pro Ala Ala Arg Leu Gly Phe His Leu Lys Ala Ser Leu  
 660 665 670  
 Thr Asp Arg Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln  
 675 680 685  
 Asn Lys Leu Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu  
 690 695 700  
 Asn Leu Gly Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn  
 705 710 715 720  
 Trp Tyr Val Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His  
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 <211> 2277  
 <212> DNA  
 <213> Neisseria meningitidis

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 <211> 758  
 <212> PRT  
 <213> *Neisseria meningitidis*

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           20                  25                  30  
 Leu Glu Thr Val Ser Val Val Gly Lys Ser Arg Pro Arg Ala Thr Ser  
       35                  40                  45  
 Gly Leu Leu His Thr Ser Thr Ala Ser Asp Lys Ile Ile Ser Gly Asp  
       50                  55                  60  
 Thr Leu Arg Gln Lys Ala Val Asn Leu Gly Asp Ala Leu Asp Gly Val  
       65                  70                  75                  80

Pro Gly Ile His Ala Ser Gln Tyr Gly Gly Gly Ala Ser Ala Pro Val  
 85 90 95  
 Ile Arg Gly Gln Thr Gly Arg Arg Ile Lys Val Leu Asn His His Gly  
 100 105 110  
 Glu Thr Gly Asp Met Ala Asp Phe Ser Pro Asp His Ala Ile Met Val  
 115 120 125  
 Asp Ser Ala Leu Ser Gln Gln Val Glu Ile Leu Arg Gly Pro Val Thr  
 130 135 140  
 Leu Leu Tyr Ser Ser Gly Asn Val Ala Gly Leu Val Asp Val Ala Asp  
 145 150 155 160  
 Gly Lys Ile Pro Glu Lys Met Pro Glu Asn Gly Val Ser Gly Glu Leu  
 165 170 175  
 Gly Leu Arg Leu Ser Ser Gly Asn Leu Glu Lys Leu Thr Ser Gly Gly  
 180 185 190  
 Ile Asn Ile Gly Leu Gly Lys Asn Phe Val Leu His Thr Glu Gly Leu  
 195 200 205  
 Tyr Arg Lys Ser Gly Asp Tyr Ala Val Pro Arg Tyr Arg Asn Leu Lys  
 210 215 220  
 Arg Leu Pro Asp Ser His Ala Asp Ser Gln Thr Gly Ser Ile Gly Leu  
 225 230 235 240  
 Ser Trp Val Gly Glu Lys Gly Phe Ile Gly Ala Ala Tyr Ser Asp Arg  
 245 250 255  
 Arg Asp Gln Tyr Gly Leu Pro Ala His Ser His Glu Tyr Asp Asp Cys  
 260 265 270  
 His Ala Asp Ile Ile Trp Gln Lys Ser Leu Ile Asn Lys Arg Tyr Leu  
 275 280 285  
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 Pro Gly Leu Ser Cys Gly Phe His Asp Asp Asp Ala His Ala His  
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 Ala His Asn Gly Lys Pro Trp Ile Asp Leu Arg Asn Lys Arg Tyr Glu  
 325 330 335  
 Leu Arg Ala Glu Trp Lys Gln Pro Phe Pro Gly Phe Glu Ala Leu Arg  
 340 345 350  
 Val His Leu Asn Arg Asn Asp Tyr Arg His Asp Glu Lys Ala Gly Asp  
 355 360 365  
 Ala Val Glu Asn Phe Phe Asn Asn Gln Thr Gln Asn Ala Arg Ile Glu  
 370 375 380

Leu Arg His Gln Pro Ile Gly Arg Leu Lys Gly Ser Trp Gly Val Gln  
 385 390 395 400  
 Tyr Leu Gly Gln Lys Ser Ser Ala Leu Ser Ala Thr Ser Glu Ala Val  
 405 410 415  
 Lys Gln Pro Met Leu Leu Asp Asn Lys Val Gln His Tyr Ser Phe Phe  
 420 425 430  
 Gly Val Glu Gln Ala Asn Trp Asp Asn Phe Thr Leu Glu Gly Gly Val  
 435 440 445  
 Arg Val Glu Lys Gln Lys Ala Ser Ile Arg Tyr Asp Lys Ala Leu Ile  
 450 455 460  
 Asp Arg Glu Asn Tyr Tyr Asn His Pro Leu Pro Asp Leu Gly Ala His  
 465 470 475 480  
 Arg Gln Thr Ala Arg Ser Phe Ala Leu Ser Gly Asn Trp Tyr Phe Thr  
 485 490 495  
 Pro Gln His Lys Leu Ser Leu Thr Ala Ser His Gln Glu Arg Leu Pro  
 500 505 510  
 Ser Thr Gln Glu Leu Tyr Ala His Gly Lys His Val Ala Thr Asn Thr  
 515 520 525  
 Phe Glu Val Gly Asn Lys His Leu Asn Lys Glu Arg Ser Asn Asn Ile  
 530 535 540  
 Glu Leu Ala Leu Gly Tyr Glu Gly Asp Arg Trp Gln Tyr Asn Leu Ala  
 545 550 555 560  
 Leu Tyr Arg Asn Arg Phe Gly Asn Tyr Ile Tyr Ala Gln Thr Leu Asn  
 565 570 575  
 Asp Gly Arg Gly Pro Lys Ser Ile Glu Asp Asp Ser Glu Met Lys Leu  
 580 585 590  
 Val Arg Tyr Asn Gln Ser Gly Ala Asp Phe Tyr Gly Ala Glu Gly Glu  
 595 600 605  
 Ile Tyr Phe Lys Pro Thr Pro Arg Tyr Arg Ile Gly Val Ser Gly Asp  
 610 615 620  
 Tyr Val Arg Gly Arg Leu Lys Asn Leu Pro Ser Leu Pro Gly Arg Glu  
 625 630 635 640  
 Asp Ala Tyr Gly Asn Arg Pro Leu Ile Ala Gln Ala Asp Gln Asn Ala  
 645 650 655  
 Pro Arg Val Pro Ala Ala Arg Leu Gly Val His Leu Lys Ala Ser Leu  
 660 665 670  
 Thr Asp Arg Ile Asp Ala Asn Leu Asp Tyr Tyr Arg Val Phe Ala Gln  
 675 680 685

Asn Lys Leu Ala Arg Tyr Glu Thr Arg Thr Pro Gly His His Met Leu  
 690 695 700

Asn Leu Gly Ala Asn Tyr Arg Arg Asn Thr Arg Tyr Gly Glu Trp Asn  
 705 710 715 720

Trp Tyr Val Lys Ala Asp Asn Leu Leu Asn Gln Ser Val Tyr Ala His  
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Ser Ser Phe Leu Ser Asp Thr Pro Gln Met Gly Arg Ser Phe Thr Gly  
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Gly Val Asn Val Lys Phe  
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 <213> Neisseria gonorrhoeae

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 ctcccgggcg acgcgctcgg cgttttggtt gacaacgac cggcactggg cggggaaatc 180  
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 gttgcctccg cactgttatc ccatttcgaa ctcacgcaaa acacccccgc ctttgtcaaa 300  
 ggctatgcca cgttcgccga taatgacgaa ctcgaccgta ttgctgccga caacgccgtt 360  
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 aaaatccgcg aacaggcgga aggactttgg caatggctgc aggaaggcgc gcatactat 960  
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 <213> Neisseria gonorrhoeae

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Leu Ser Gly Ser Asp Leu His Tyr Leu Pro Gly Asp Ala Leu Gly Val  
 35 40 45



Trp Phe Asp Asn Asp Pro Ala Leu Val Gly Glu Ile Leu Asp Leu Leu  
 50 55 60  
 Gly Ile Asn Pro Ala Thr Glu Ile Gln Ala Gly Gly Lys Thr Leu Pro  
 65 70 75 80  
 Val Ala Ser Ala Leu Leu Ser His Phe Glu Leu Thr Gln Asn Thr Pro  
 85 90 95  
 Ala Phe Val Lys Gly Tyr Ala Thr Phe Ala Asp Asn Asp Glu Leu Asp  
 100 105 110  
 Arg Ile Ala Ala Asp Asn Ala Val Leu Gln Gly Phe Val Gln Ser Thr  
 115 120 125  
 Pro Ile Ala Gly Val Leu His Arg Phe Pro Ala Lys Leu Thr Ala Glu  
 130 135 140  
 Gln Phe Ala Gly Leu Leu Arg Pro Leu Ala Pro Arg Leu Tyr Ser Ile  
 145 150 155 160  
 Ser Ser Ser Gln Ala Glu Ala Gly Asp Glu Val His Leu Thr Val Gly  
 165 170 175  
 Ala Val Arg Phe Glu His Glu Gly Arg Ala Arg Ala Gly Gly Ala Ser  
 180 185 190  
 Gly Phe Phe Ala Asp Arg Leu Glu Glu Asp Gly Thr Val Arg Val Phe  
 195 200 205  
 Ala Glu Arg Asn Asp Gly Phe Arg Leu Pro Glu Asp Ser Arg Lys Pro  
 210 215 220  
 Ile Val Met Ile Gly Ser Gly Thr Gly Val Ala Pro Phe Arg Ala Phe  
 225 230 235 240  
 Val Gln Gln Arg Ala Ala Glu Asn Ala Glu Gly Arg Asn Trp Leu Ile  
 245 250 255  
 Phe Gly Asn Pro His Phe Ala Ala Asp Phe Leu Tyr Gln Thr Glu Trp  
 260 265 270  
 Gln Gln Phe Ala Lys Asp Gly Phe Leu His Arg Tyr Asp Phe Ala Trp  
 275 280 285  
 Ser Arg Asp Gln Glu Glu Lys Ile Tyr Val Gln Asp Lys Ile Arg Glu  
 290 295 300  
 Gln Ala Glu Gly Leu Trp Gln Trp Leu Gln Glu Gly Ala His Ile Tyr  
 305 310 315 320  
 Val Cys Gly Asp Ala Ala Lys Met Ala Lys Glu Val Glu Ala Ala Leu  
 325 330 335  
 Leu Asp Val Ile Ile Gly Ala Gly His Ser Asp Glu Asp Gly Ala Glu  
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Gly Tyr Leu Asp Met Leu Arg Glu Glu Lys Arg Tyr Gln Arg Asp Val  
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Tyr

<210> 609  
 <211> 1800  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 609  
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<210> 610  
 <211> 599  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 610  
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Gln Leu Leu Ser Gly Leu Asp Ala Ala Gln Trp Ala Trp Leu Ser Gly  
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Tyr Ala Trp Ala Lys Ala Gly Asn Gly Ala Ser Ala Gly Leu Pro Ala  
 35 40 45

Leu Gln Thr Ala Leu Pro Ala Ala Glu Pro Phe Ser Val Thr Val Leu  
 50 55 60

Ser Ala Ser Gln Thr Gly Asn Ala Lys Ser Val Ala Asp Lys Ala Ala  
 65 70 75 80

Asp Ser Leu Glu Ala Ala Gly Ile Gln Val Ser Arg Ala Glu Leu Lys  
 85 90 95

Asp Tyr Lys Ala Lys Asn Ile Ala Gly Glu Arg Arg Leu Leu Leu Val  
 100 105 110

Thr Ser Thr Gln Gly Glu Gly Glu Pro Pro Lys Glu Ala Val Val Leu  
 115 120 125

His Lys Leu Leu Asn Gly Lys Lys Ala Pro Lys Leu Asp Lys Leu Gln  
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Phe Ala Val Leu Gly Leu Gly Asp Ser Ser Tyr Pro Asn Phe Cys Gln  
 145 150 155 160

Ala Gly Lys Asp Phe Asp Arg Arg Phe Glu Glu Leu Gly Ala Lys Arg  
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Leu Leu Glu Arg Val Asp Ala Asp Leu Asp Phe Thr Ala Ser Ala Asn  
 180 185 190

Ala Trp Thr Asp Asn Ile Ala Ala Leu Leu Lys Glu Glu Ala Ala Lys  
 195 200 205

Asn Arg Ala Thr Pro Ala Pro Gln Thr Thr Pro Pro Ala Gly Leu Gln  
 210 215 220

Thr Ala Pro Asp Gly Arg Tyr Cys Lys Ala Ala Pro Phe Pro Ala Ala  
 225 230 235 240

Leu Leu Ala Asn Gln Lys Ile Thr Ala Arg Gln Ser Asp Lys Asp Val  
 245 250 255

Arg His Ile Glu Ile Asp Leu Ser Gly Ser Asp Leu His Tyr Leu Pro  
 260 265 270

Gly Asp Ala Leu Gly Val Trp Phe Asp Asn Asp Pro Ala Leu Val Arg  
 275 280 285

Glu Ile Leu Asp Leu Leu Gly Ile Asp Pro Ala Thr Glu Ile Gln Ala  
 290 295 300

Gly Gly Lys Met Met Pro Val Ala Arg Ala Leu Ser Ser His Phe Glu  
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Leu Thr Gln Asn Thr Pro Ala Phe Val Lys Gly Tyr Ala Ala Phe Ala

325					330					335					
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		355					360					365			
Ala	Ser	Leu	Thr	Ala	Glu	Gln	Phe	Ile	Arg	Leu	Leu	Arg	Pro	Leu	Ala
		370					375					380			
Pro	Arg	Leu	Tyr	Ser	Ile	Ser	Ser	Ala	Gln	Ala	Glu	Val	Gly	Asp	Glu
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Val	His	Leu	Thr	Val	Gly	Val	Val	Arg	Phe	Glu	His	Glu	Gly	Arg	Ala
				405					410					415	
Arg	Thr	Gly	Gly	Ala	Ser	Gly	Phe	Leu	Ala	Asp	Arg	Leu	Glu	Glu	Asp
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Gly	Thr	Val	Arg	Val	Phe	Val	Glu	Arg	Asn	Asp	Gly	Phe	Arg	Leu	Pro
		435					440					445			
Glu	Asp	Ser	Arg	Lys	Pro	Ile	Val	Met	Ile	Gly	Ser	Gly	Thr	Gly	Val
	450					455					460				
Ala	Pro	Phe	Arg	Ala	Phe	Val	Gln	Gln	Arg	Ala	Ala	Glu	Asn	Ala	Glu
465					470					475					480
Gly	Lys	Asn	Trp	Leu	Ile	Phe	Gly	Asn	Pro	His	Phe	Ala	Arg	Asp	Phe
			485					490						495	
Leu	Tyr	Gln	Thr	Glu	Trp	Gln	Gln	Phe	Ala	Lys	Asp	Gly	Phe	Leu	His
			500					505					510		
Arg	Tyr	Asp	Phe	Ala	Trp	Ser	Arg	Asp	Gln	Glu	Glu	Lys	Ile	Tyr	Val
		515					520					525			
Gln	Asp	Lys	Ile	Arg	Glu	Gln	Ala	Glu	Gly	Leu	Trp	Gln	Trp	Leu	Gln
	530					535					540				
Glu	Gly	Ala	His	Ile	Tyr	Val	Cys	Gly	Asp	Ala	Ala	Lys	Met	Ala	Lys
545					550					555					560
Asp	Val	Glu	Ala	Ala	Leu	Leu	Asp	Val	Ile	Ile	Gly	Ala	Gly	His	Leu
			565						570					575	
Asp	Glu	Glu	Gly	Ala	Glu	Glu	Tyr	Leu	Asp	Met	Leu	Arg	Glu	Glu	Lys
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Arg	Tyr	Gln	Arg	Asp	Val	Tyr									
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<210> 611  
 <211> 1800  
 <212> DNA

<213> Neisseria meningitidis

<400> 611

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<210> 612

<211> 599

<212> PRT

<213> Neisseria meningitidis

<400> 612

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    20              25              30

Tyr Ala Trp Ala Lys Ala Gly Asn Gly Ala Ser Ala Gly Leu Pro Ala
    35              40              45

Leu Gln Thr Ala Leu Pro Thr Ala Glu Pro Phe Ser Val Thr Val Leu
    50              55              60

Ser Ala Ser Gln Thr Gly Asn Ala Lys Ser Val Ala Asp Lys Ala Ala
    65              70              75              80

Asp Ser Leu Glu Ala Ala Gly Ile Gln Val Ser Arg Ala Glu Leu Lys
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				85				90				95			
Asp	Tyr	Lys	Ala	Lys	Asn	Ile	Ala	Gly	Glu	Arg	Arg	Leu	Leu	Leu	Val
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Thr	Ser	Thr	Gln	Gly	Glu	Gly	Glu	Pro	Pro	Glu	Glu	Ala	Val	Val	Leu
			115				120						125		
His	Lys	Leu	Leu	Asn	Gly	Lys	Lys	Ala	Pro	Lys	Leu	Asp	Lys	Leu	Gln
			130				135						140		
Phe	Ala	Val	Leu	Gly	Leu	Gly	Asp	Ser	Ser	Tyr	Pro	Asn	Phe	Cys	Arg
			145				150						155		
Ala	Gly	Lys	Asp	Phe	Asp	Lys	Arg	Phe	Glu	Glu	Leu	Gly	Ala	Lys	Arg
				165						170			175		
Leu	Leu	Glu	Arg	Val	Asp	Ala	Asp	Leu	Asp	Phe	Ala	Ala	Ala	Ala	Asp
			180				185						190		
Gly	Trp	Thr	Asp	Asn	Ile	Ala	Ala	Leu	Leu	Lys	Glu	Glu	Ala	Ala	Lys
			195				200						205		
Asn	Arg	Ala	Thr	Pro	Ala	Pro	Gln	Thr	Thr	Pro	Pro	Ala	Gly	Leu	Gln
			210				215						220		
Thr	Ala	Pro	Asp	Gly	Arg	Tyr	Cys	Lys	Ala	Asp	Pro	Phe	Pro	Ala	Ala
			225				230						235		
Leu	Leu	Ala	Asn	Gln	Lys	Ile	Thr	Ala	Arg	Gln	Ser	Asp	Lys	Asp	Val
				245						250			255		
Arg	His	Ile	Glu	Ile	Asp	Leu	Ser	Gly	Ser	Asp	Leu	His	Tyr	Leu	Pro
			260				265						270		
Gly	Asp	Ala	Leu	Gly	Val	Trp	Phe	Asp	Asn	Asp	Pro	Ala	Leu	Val	Arg
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Glu	Ile	Leu	Asp	Leu	Leu	Gly	Ile	Asp	Gln	Ala	Thr	Glu	Ile	Gln	Ala
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Gly	Gly	Lys	Thr	Leu	Pro	Val	Ala	Ser	Ala	Leu	Leu	Ser	His	Phe	Glu
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Leu	Thr	Gln	Asn	Thr	Pro	Ala	Phe	Val	Lys	Gly	Tyr	Ala	Pro	Phe	Ala
				325						330			335		
Asp	Asp	Asp	Glu	Leu	Asp	Arg	Ile	Ala	Ala	Asp	Asn	Ala	Val	Leu	Gln
			340				345						350		
Gly	Phe	Val	Gln	Ser	Thr	Pro	Ile	Ala	Asp	Val	Leu	His	Arg	Phe	Pro
			355				360						365		
Ala	Lys	Leu	Thr	Ala	Glu	Gln	Phe	Ala	Gly	Leu	Leu	Arg	Pro	Leu	Ala
			370				375						380		

Pro Arg Leu Tyr Ser Ile Ser Ser Ser Gln Ala Glu Val Gly Asp Glu  
 385 390 395 400  
 Val His Leu Thr Val Gly Ala Val Arg Phe Glu His Glu Gly Arg Ala  
 405 410 415  
 Arg Ala Gly Gly Ala Ser Gly Phe Leu Ala Asp Arg Leu Glu Glu Asp  
 420 425 430  
 Gly Thr Val Arg Val Phe Val Glu Arg Asn Asp Gly Phe Arg Leu Pro  
 435 440 445  
 Glu Asp Ser Arg Lys Pro Ile Val Met Ile Gly Ser Gly Thr Gly Val  
 450 455 460  
 Ala Pro Phe Arg Ala Phe Val Gln Gln Arg Ala Ala Glu Asn Ala Glu  
 465 470 475 480  
 Gly Lys Asn Trp Leu Phe Phe Gly Asn Pro His Phe Ala Arg Asp Phe  
 485 490 495  
 Leu Tyr Gln Thr Glu Trp Gln Gln Phe Ala Lys Asp Gly Phe Leu His  
 500 505 510  
 Arg Tyr Asp Phe Ala Trp Ser Arg Asp Gln Glu Glu Lys Ile Tyr Val  
 515 520 525  
 Gln Asp Lys Ile Arg Glu Gln Ala Glu Gly Leu Trp Gln Trp Leu Gln  
 530 535 540  
 Glu Gly Ala His Ile Tyr Val Cys Gly Asp Ala Ala Lys Met Ala Lys  
 545 550 555 560  
 Asp Val Glu Ala Ala Leu Leu Asp Val Ile Ile Gly Ala Gly His Leu  
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 Arg Tyr Gln Arg Asp Val Tyr  
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<210> 613

<211> 1812

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 613

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 gaccagactt tcgagttggt cgacaacttg ggtgcgaccg acgagcagtt ggatttcccg 480

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<210> 614

<211> 603

<212> PRT

<213> Neisseria gonorrhoeae

<400> 614

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Lys Thr Thr Leu Val Asp Gln Leu Leu Arg Gln Ser Gly Thr Phe Arg
      20             25             30

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Ala Asn Gln Gln Val Asp Glu Arg Val Met Asp Ser Asn Asp Leu Glu
      35             40             45

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```

Lys Glu Arg Gly Ile Thr Ile Leu Ala Lys Asn Thr Ala Ile Asp Tyr
      50             55             60

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Glu Gly Cys His Ile Asn Ile Val Asp Thr Pro Gly His Ala Asp Phe
      65             70             75             80

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```

Gly Gly Glu Val Glu Arg Val Leu Gly Met Val Asp Cys Val Val Leu
      85             90             95

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```

Leu Val Asp Ala Gln Glu Gly Pro Met Pro Gln Thr Arg Phe Val Thr
      100            105            110

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Lys Lys Ala Leu Ala Leu Gly Leu Lys Pro Ile Val Val Ile Asn Lys
      115            120            125

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Ile Asp Lys Pro Ser Ala Arg Pro Ser Trp Val Ile Asp Gln Thr Phe

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130					135					140					
Glu 145	Leu	Phe	Asp	Asn 150	Leu 150	Gly	Ala	Thr	Asp	Glu 155	Gln	Leu	Asp	Phe	Pro 160
Ile	Val	Tyr	Ala	Ser 165	Gly	Leu	Ser	Gly	Phe 170	Ala	Lys	Leu	Glu	Glu	Thr
Asp	Glu	Ser	Ser 180	Asp	Met	Arg	Pro	Leu 185	Phe	Asp	Thr	Ile	Leu 190	Lys	Tyr
Thr	Pro	Ala 195	Pro	Ser	Gly	Ser	Ala 200	Asp	Glu	Pro	Leu	Gln 205	Leu	Gln	Ile
Ser	Gln 210	Leu	Asp	Tyr	Asp	Asn 215	Tyr	Thr	Gly	Arg	Leu 220	Gly	Ile	Gly	Arg
Ile 225	Leu	Asn	Gly	Arg	Ile 230	Lys	Pro	Gly	Gln	Thr 235	Val	Ala	Val	Met	Asn 240
His	Glu	Gln	Gln	Ile 245	Ala	Gln	Gly	Arg	Ile 250	Asn	Gln	Leu	Leu	Gly	Phe
Lys	Gly	Leu	Glu 260	Arg	Val	Pro	Leu	Glu 265	Glu	Ala	Glu	Ala	Gly	Asp	Ile
Val	Ile 275	Ile	Ser	Gly	Ile	Glu	Asp 280	Ile	Gly	Ile	Gly	Val 285	Thr	Ile	Thr
Asp	Lys 290	Asp	Asn	Pro	Lys	Gly 295	Leu	Pro	Met	Leu	Ser 300	Val	Asp	Glu	Pro
Thr 305	Leu	Thr	Met	Asp	Phe 310	Met	Val	Asn	Thr	Ser 315	Pro	Leu	Ala	Gly	Thr 320
Glu	Gly	Lys	Phe	Val 325	Thr	Ser	Arg	Gln	Ile 330	Arg	Asp	Arg	Leu	Gln 335	Lys
Glu	Leu	Leu	Thr 340	Asn	Val	Ala	Leu	Arg 345	Val	Glu	Asp	Thr	Ala 350	Asp	Ala
Asp	Val	Phe 355	Arg	Val	Ser	Gly	Arg 360	Gly	Glu	Leu	His	Leu 365	Thr	Ile	Leu
Leu	Glu 370	Asn	Met	Arg	Arg	Glu	Gly 375	Tyr	Glu	Leu	Ala 380	Val	Gly	Lys	Pro
Arg 385	Val	Val	Tyr	Arg	Asp 390	Ile	Asp	Gly	Gln	Lys 395	Cys	Glu	Pro	Tyr	Glu 400
Asn	Leu	Thr	Val	Asp 405	Val	Pro	Asp	Asp	Asn 410	Gln	Gly	Ala	Val	Met	Glu 415
Glu	Leu	Gly	Arg 420	Arg	Arg	Gly	Glu	Leu 425	Thr	Asn	Met	Glu	Ser	Asp	Gly
Asn	Gly	Arg	Thr	Arg	Leu	Glu	Tyr	His	Ile	Pro	Ala	Arg	Gly	Leu	Ile

435                      440                      445  
 Gly Phe Gln Gly Glu Phe Met Thr Leu Thr Arg Gly Val Gly Leu Met  
     450                      455                      460  
 Ser His Val Phe Asp Asp Tyr Ala Pro Val Lys Pro Asp Met Pro Gly  
     465                      470                      475                      480  
 Arg His Asn Gly Val Leu Val Ser Gln Glu Gln Gly Glu Ala Val Ala  
                     485                      490                      495  
 Tyr Ala Leu Trp Asn Leu Glu Asp Arg Gly Arg Met Phe Val Ser Pro  
                     500                      505                      510  
 Asn Asp Lys Ile Tyr Glu Gly Met Ile Ile Gly Ile His Ser Arg Asp  
                     515                      520                      525  
 Asn Asp Leu Val Val Asn Pro Leu Lys Gly Lys Lys Leu Thr Asn Ile  
                     530                      535                      540  
 Arg Ala Ser Gly Thr Asp Glu Ala Val Arg Leu Thr Thr Pro Ile Lys  
     545                      550                      555                      560  
 Leu Thr Leu Glu Gly Ala Val Glu Phe Ile Asp Asp Asp Glu Leu Val  
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 Glu Ile Thr Pro Gln Ser Ile Arg Leu Arg Met Arg Tyr Leu Ser Glu  
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 Leu Glu Arg Arg Arg His Phe Lys Lys Leu Asp  
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<210> 615  
 <211> 1812  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 615  
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aagctggatt ga 1812

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 <211> 603  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 616  
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 Ala Asn Gln Gln Val Asp Glu Arg Val Met Asp Ser Asn Asp Leu Glu  
 35 40 45  
 Lys Glu Arg Gly Ile Thr Ile Leu Ala Lys Asn Thr Ala Ile Asp Tyr  
 50 55 60  
 Glu Gly Tyr His Ile Asn Ile Val Asp Thr Pro Gly His Ala Asp Phe  
 65 70 75 80  
 Gly Gly Glu Val Glu Arg Val Leu Gly Met Val Asp Cys Val Val Leu  
 85 90 95  
 Leu Val Asp Ala Gln Glu Gly Pro Met Pro Gln Thr Arg Phe Val Thr  
 100 105 110  
 Lys Lys Ala Leu Ala Leu Gly Leu Lys Pro Ile Val Val Ile Asn Lys  
 115 120 125  
 Ile Asp Lys Pro Ser Ala Arg Pro Ser Trp Val Ile Asp Gln Thr Phe  
 130 135 140  
 Glu Leu Phe Asp Asn Leu Gly Ala Thr Asp Glu Gln Leu Asp Phe Pro  
 145 150 155 160  
 Ile Val Tyr Ala Ser Gly Leu Ser Gly Phe Ala Lys Leu Glu Glu Thr  
 165 170 175  
 Asp Glu Ser Asn Asp Met Arg Pro Leu Phe Asp Thr Ile Leu Lys Tyr  
 180 185 190

Thr Pro Ala Pro Ser Gly Ser Ala Asp Glu Thr Leu Gln Leu Gln Ile  
195 200 205

Ser Gln Leu Asp Tyr Asp Asn Tyr Thr Gly Arg Leu Gly Ile Gly Arg  
210 215 220

Ile Leu Asn Gly Arg Ile Lys Pro Gly Gln Thr Val Ala Val Met Asn  
225 230 235 240

His Asp Gln Gln Ile Ala Gln Gly Arg Ile Asn Gln Leu Leu Gly Phe  
245 250 255

Lys Gly Leu Glu Arg Val Pro Leu Glu Glu Ala Glu Ala Gly Asp Ile  
260 265 270

Val Ile Ile Ser Gly Ile Glu Asp Ile Gly Ile Gly Val Thr Ile Thr  
275 280 285

Asp Lys Asp Asn Pro Lys Gly Leu Pro Met Leu Ser Val Asp Glu Pro  
290 295 300

Thr Leu Thr Met Asp Phe Met Val Asn Thr Ser Pro Leu Ala Gly Thr  
305 310 315 320

Glu Gly Lys Phe Val Thr Ser Arg Gln Ile Arg Asp Arg Leu Gln Lys  
325 330 335

Glu Leu Leu Thr Asn Val Ala Leu Arg Val Glu Asp Thr Ala Asp Ala  
340 345 350

Asp Val Phe Arg Val Ser Gly Arg Gly Glu Leu His Leu Thr Ile Leu  
355 360 365

Leu Glu Asn Met Arg Arg Glu Gly Tyr Glu Leu Ala Val Gly Lys Pro  
370 375 380

Arg Val Val Tyr Arg Asp Ile Asp Gly Gln Lys Cys Glu Pro Tyr Glu  
385 390 395 400

Asn Leu Thr Val Asp Val Pro Asp Asp Asn Gln Gly Ala Val Met Glu  
405 410 415

Glu Leu Gly Arg Arg Arg Gly Glu Leu Thr Asn Met Glu Ser Asp Gly  
420 425 430

Asn Gly Arg Thr Arg Leu Glu Tyr His Ile Pro Ala Arg Gly Leu Ile  
435 440 445

Gly Phe Gln Gly Glu Phe Met Thr Leu Thr Arg Gly Val Gly Leu Met  
450 455 460

Ser His Val Phe Asp Asp Tyr Ala Pro Val Lys Pro Asp Met Pro Gly  
465 470 475 480

Arg His Asn Gly Val Leu Val Ser Gln Glu Gln Gly Glu Ala Val Ala

485	490	495
Tyr Ala Leu Trp Asn Leu Glu Asp Arg Gly Arg Met Phe Val Ser Pro		
500	505	510
Asn Asp Lys Ile Tyr Glu Gly Met Ile Ile Gly Ile His Ser Arg Asp		
515	520	525
Asn Asp Leu Val Val Asn Pro Leu Lys Gly Lys Lys Leu Thr Asn Ile		
530	535	540
Arg Ala Ser Gly Thr Asp Glu Ala Val Arg Leu Thr Thr Pro Ile Lys		
545	550	555
Leu Thr Leu Glu Gly Ala Val Glu Phe Ile Asp Asp Asp Glu Leu Val		
565	570	575
Glu Ile Thr Pro Gln Ser Ile Arg Leu Arg Lys Arg Tyr Leu Ser Glu		
580	585	590
Leu Glu Arg Arg Arg His Phe Lys Lys Leu Asp		
595	600	

<210> 617  
 <211> 1812  
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 <213> Neisseria meningitidis

<400> 617

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 <212> PRT  
 <213> Neisseria meningitidis

<400> 618  
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Lys Thr Thr Leu Val Asp Gln Leu Leu Arg Gln Ser Gly Thr Phe Arg  
 20 25 30

Ala Asn Gln Gln Val Asp Glu Arg Val Met Asp Ser Asn Asp Leu Glu  
 35 40 45

Lys Glu Arg Gly Ile Thr Ile Leu Ala Lys Asn Thr Ala Ile Asp Tyr  
 50 55 60

Glu Gly Tyr His Ile Asn Ile Val Asp Thr Pro Gly His Ala Asp Phe  
 65 70 75 80

Gly Gly Glu Val Glu Arg Val Leu Gly Met Val Asp Cys Val Val Leu  
 85 90 95

Leu Val Asp Ala Gln Glu Gly Pro Met Pro Gln Thr Arg Phe Val Thr  
 100 105 110

Lys Lys Ala Leu Ala Leu Gly Leu Lys Pro Ile Val Val Ile Asn Lys  
 115 120 125

Ile Asp Lys Pro Ser Ala Arg Pro Ser Trp Val Ile Asp Gln Thr Phe  
 130 135 140

Glu Leu Phe Asp Asn Leu Gly Ala Thr Asp Glu Gln Leu Asp Phe Pro  
 145 150 155 160

Ile Val Tyr Ala Ser Gly Leu Ser Gly Phe Ala Lys Leu Glu Glu Thr  
 165 170 175

Asp Glu Ser Asn Asp Met Arg Pro Leu Phe Asp Thr Ile Leu Lys Tyr  
 180 185 190

Thr Pro Ala Pro Ser Gly Ser Ala Asp Glu Thr Leu Gln Leu Gln Ile  
 195 200 205

Ser Gln Leu Asp Tyr Asp Asn Tyr Thr Gly Arg Leu Gly Ile Gly Arg  
 210 215 220

Ile Leu Asn Gly Arg Ile Lys Pro Gly Gln Val Val Ala Val Met Asn  
 225 230 235 240

His Asp Gln Gln Ile Ala Gln Gly Arg Ile Asn Gln Leu Leu Gly Phe  
 245 250 255

Lys Gly Leu Glu Arg Val Pro Leu Glu Glu Ala Glu Ala Gly Asp Ile  
 260 265 270

Val Ile Ile Ser Gly Ile Glu Asp Ile Gly Ile Gly Val Thr Ile Thr  
 275 280 285

Asp Lys Asp Asn Pro Lys Gly Leu Pro Met Leu Ser Val Asp Glu Pro  
 290 295 300

Thr Leu Thr Met Asp Phe Met Val Asn Thr Ser Pro Leu Ala Gly Thr  
 305 310 315 320

Glu Gly Lys Phe Val Thr Ser Arg Gln Ile Arg Asp Arg Leu Gln Lys  
 325 330 335

Glu Leu Leu Thr Asn Val Ala Leu Arg Val Glu Asp Thr Ala Asp Ala  
 340 345 350

Asp Val Phe Arg Val Ser Gly Arg Gly Glu Leu His Leu Thr Ile Leu  
 355 360 365

Leu Glu Asn Met Arg Arg Glu Gly Tyr Glu Leu Ala Val Gly Lys Pro  
 370 375 380

Arg Val Val Tyr Arg Asp Ile Asp Gly Gln Lys Cys Glu Pro Tyr Glu  
 385 390 395 400

Asn Leu Thr Val Asp Val Pro Asp Asp Asn Gln Gly Ala Val Met Glu  
 405 410 415

Glu Leu Gly Arg Arg Arg Gly Glu Leu Thr Asn Met Glu Ser Asp Gly  
 420 425 430

Asn Gly Arg Thr Arg Leu Glu Tyr His Ile Pro Ala Arg Gly Leu Ile  
 435 440 445

Gly Phe Gln Gly Glu Phe Met Thr Leu Thr Arg Gly Val Gly Leu Met  
 450 455 460

Ser His Val Phe Asp Asp Tyr Ala Pro Val Lys Pro Asp Met Pro Gly  
 465 470 475 480

Arg His Asn Gly Val Leu Val Ser Gln Glu Gln Gly Glu Ala Val Ala  
 485 490 495

Tyr Ala Leu Trp Asn Leu Glu Asp Arg Gly Arg Met Phe Val Ser Pro  
 500 505 510

Asn Asp Lys Ile Tyr Glu Gly Met Ile Ile Gly Ile His Ser Arg Asp  
 515 520 525

Asn Asp Leu Val Val Asn Pro Leu Lys Gly Lys Lys Leu Thr Asn Ile  
 530 535 540

Arg Ala Ser Gly Thr Asp Glu Ala Val Arg Leu Thr Thr Pro Ile Lys  
545 550 555 560

Leu Thr Leu Glu Gly Ala Val Glu Phe Ile Asp Asp Asp Glu Leu Val  
565 570 575

Glu Ile Thr Pro Gln Ser Ile Arg Leu Arg Lys Arg Tyr Leu Ser Glu  
580 585 590

Leu Glu Arg Arg Arg His Phe Lys Lys Leu Asp  
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<210> 619

<211> 657

<212> DNA

<213> Neisseria gonorrhoeae

<400> 619

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gccgcccgc ttcggttgcc cgcgcttgcc gcagccgcca tctgctcct gtcctga 657

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<211> 218

<212> PRT

<213> Neisseria gonorrhoeae

<400> 620

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Trp Leu Leu Ala Ala Ser Leu Pro Phe Met Trp Tyr Ser Ala Lys Ala  
20 25 30

Gly Gly Asp Met Leu Gln Trp His Thr Arg Val Gly Leu Leu Val Leu  
35 40 45

Phe Leu Leu Val Phe Arg Leu Cys Trp Gly Ile Trp Gly Ser Asp Thr  
50 55 60

Ala Arg Phe Ser Arg Phe Val Arg Gly Trp Ala Gly Ile Arg Gly Tyr  
65 70 75 80

Leu Lys Asn Gly Ile Pro Glu His Ile Gln Pro Gly His Asn Pro Leu  
85 90 95



Gly Ala Leu Met Val Val Ala Leu Leu Ala Ala Val Ser Phe Gln Val  
                   100                  105                  110  
 Gly Thr Gly Leu Phe Ala Ala Asn Glu Asn Thr Phe Ser Thr Asn Gly  
           115                  120                  125  
 Tyr Leu Asn His Leu Val Ser Glu His Thr Gly Ser Leu Ile Arg Lys  
       130                  135                  140  
 Ile His Leu Asn Phe Phe Lys Leu Leu Ala Val Phe Ser Ala Val His  
   145                  150                  155                  160  
 Ile Ala Ala Val Ala Ala Tyr Arg Ile Phe Lys Lys Lys Asn Leu Val  
                   165                  170                  175  
 Arg Pro Met Ile Thr Gly Phe Lys Tyr Ile Glu Gly Lys Thr Ser Ile  
           180                  185                  190  
 Arg Phe Ala Gly Lys Ala Ala Leu Ala Ala Ala Leu Ser Val Ala Ala  
       195                  200                  205  
 Leu Ala Ala Ala Ala Ile Leu Leu Leu Ser  
       210                  215

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 <211> 657  
 <212> DNA  
 <213> Neisseria meningitidis

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<210> 622  
 <211> 218  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 622  
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       20                  25                  30

Gly Gly Asp Met Leu Gln Trp His Thr Arg Val Gly Leu Phe Val Leu  
                   35                                  40                                  45  
 Phe Leu Leu Val Phe Arg Leu Cys Trp Gly Ile Trp Gly Ser Asp Thr  
           50                                  55                                  60  
 Ala Arg Phe Ser Arg Phe Val Gln Gly Trp Ala Gly Ile Arg Gly Tyr  
       65                                  70                                  75                                  80  
 Leu Lys Asn Gly Ile Pro Glu His Ile Gln Pro Gly His Asn Pro Leu  
                                   85                                  90                                  95  
 Gly Ala Leu Met Val Val Ala Leu Leu Ala Ala Val Ser Phe Gln Val  
                   100                                  105                                  110  
 Gly Thr Gly Leu Phe Ala Ala Asp Glu Asn Thr Phe Ser Thr Asn Gly  
           115                                  120                                  125  
 Tyr Leu Asn His Leu Val Ser Glu His Thr Gly Ser Leu Met Arg Lys  
       130                                  135                                  140  
 Ile His Leu Asn Phe Phe Lys Leu Leu Ala Val Phe Ser Ala Ile His  
       145                                  150                                  155                                  160  
 Ile Ala Ala Val Ala Ala Tyr Arg Val Phe Lys Lys Lys Asn Leu Ile  
                   165                                  170                                  175  
 Leu Pro Met Ile Thr Gly Phe Lys Tyr Ile Glu Gly Lys Thr Ser Ile  
           180                                  185                                  190  
 Arg Phe Ala Gly Lys Ala Ala Leu Ala Ala Ala Leu Ser Val Ala Ser  
       195                                  200                                  205  
 Leu Ala Ala Ala Ala Ile Leu Leu Leu Ser  
       210                                  215

<210> 623

<211> 657

<212> DNA

<213> *Neisseria meningitidis*

<400> 623

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gccgcgcgat tatcggttgc cgcgcttgcc gcagccgcca tcctgctcct gtcctga 657
  
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 <211> 218  
 <212> PRT  
 <213> Neisseria meningitidis

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             20                    25                    30  
 Gly Gly Asp Met Leu Gln Trp His Thr Arg Val Gly Leu Phe Ile Leu  
             35                    40                    45  
 Phe Leu Leu Val Phe Arg Leu Cys Trp Gly Ile Trp Gly Ser Asp Thr  
             50                    55                    60  
 Ala Arg Phe Ser Arg Phe Val Arg Gly Trp Ser Gly Ile Arg Glu Tyr  
             65                    70                    75                    80  
 Met Lys Asn Gly Ile Pro Glu His Val Gln Pro Gly His Asn Pro Leu  
                     85                    90                    95  
 Gly Ala Leu Met Val Val Ala Leu Leu Ala Ala Val Ser Phe Gln Val  
             100                    105                    110  
 Gly Thr Gly Leu Phe Ala Ala Asp Val Asn Thr Phe Ser Thr Asn Gly  
             115                    120                    125  
 Tyr Leu Asn His Leu Val Ser Glu His Thr Gly Ser Leu Met Arg Lys  
             130                    135                    140  
 Ile His Leu Asn Phe Phe Lys Leu Leu Ala Val Phe Ser Ala Val His  
             145                    150                    155                    160  
 Ile Ala Xaa Val Ala Ala Tyr Arg Val Phe Lys Lys Lys Asn Leu Val  
                     165                    170                    175  
 Leu Pro Met Ile Thr Gly Phe Lys Tyr Ile Glu Gly Lys Thr Ser Ile  
             180                    185                    190  
 Arg Phe Ala Gly Lys Ala Ala Leu Ala Ala Ala Leu Ser Val Ala Ala  
             195                    200                    205  
 Leu Ala Ala Ala Ala Ile Leu Leu Leu Ser  
             210                    215

<210> 625  
 <211> 1077  
 <212> DNA  
 <213> Neisseria gonorrhoeae

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ctgtcgggta tgctgattcg gacttcggta tcggttcccc agcattgggt gtattttcaa 420

atcgggcggc tgacggggaa taatgcggtt cagacggcat cggaaggcaa aacctgttgc 480

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gttttgattt tccctgccaa tatcctgccg attatgattt cgtccaatcc tgccgccacg 660

gaggccaaca ccatctttag cggcatcgct tatatgtggg acgagggcga caggctgatt 720

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<210> 626

<211> 358

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 626

Met	Gly	Phe	Ala	Tyr	Ser	Met	Thr	Tyr	Ile	Glu	Val	Gly	Ile	Pro	Glu
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			20					25					30		

Gln	Asp	Tyr	Gly	Phe	Leu	Ala	Glu	Val	Met	Phe	Val	Leu	Thr	Phe	Gly
	35						40					45			

Ala	Pro	Val	Leu	Phe	Leu	Leu	Leu	Cys	Leu	Tyr	Val	Tyr	Ala	Ala	Leu
	50					55					60				

Ile	Arg	Lys	Gln	Ala	Tyr	Pro	Ala	Leu	Arg	Leu	Ala	Thr	Arg	Val	Met
65					70				75					80	

Val	Arg	Leu	Arg	Gln	Ala	Met	Met	Val	Asp	Val	Phe	Phe	Val	Ser	Thr
				85					90					95	

Leu	Val	Ala	Tyr	Ile	Lys	Leu	Ser	Ser	Val	Ala	Lys	Val	Arg	Phe	Gly
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Pro	Ala	Phe	Tyr	Leu	Met	Phe	Ala	Leu	Ser	Val	Met	Leu	Ile	Arg	Thr
		115					120					125			

Ser	Val	Ser	Val	Pro	Gln	His	Trp	Val	Tyr	Phe	Gln	Ile	Gly	Arg	Leu
	130					135					140				

Thr	Gly	Asn	Asn	Ala	Val	Gln	Thr	Ala	Ser	Glu	Gly	Lys	Thr	Cys	Cys
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Ser	Arg	Cys	Leu	Tyr	Phe	Arg	Asp	Ser	Ala	Glu	Ser	Pro	Cys	Gly	Val
				165					170					175	

Cys Gly Ala Glu Leu Tyr Gly Gly Arg Pro Lys Ser Leu Ser Ile Ser  
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 Ser Ala Phe Leu Thr Ala Ala Val Val Leu Tyr Phe Pro Ala Asn Ile  
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 Leu Pro Ile Met Ile Ser Ser Asn Pro Ala Ala Thr Glu Ala Asn Thr  
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 Ile Phe Ser Gly Ile Ala Tyr Met Trp Asp Glu Gly Asp Arg Leu Ile  
 225 230 235 240  
 Ala Ala Val Ile Phe Ser Ala Ser Ile Leu Val Pro Val Leu Lys Ile  
 245 250 255  
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 Gly Ala Lys Lys Leu Ser His Leu Tyr Arg Ile Thr Glu Ala Val Gly  
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 Arg Trp Ser Met Ile Asp Ile Phe Val Ile Ile Ile Leu Met Cys Ser  
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 Phe His Thr Tyr Ala Ala Arg Val Ile Pro Gly Ser Ala Ala Val Tyr  
 305 310 315 320  
 Phe Cys Leu Val Val Ile Leu Thr Met Leu Ser Ala Tyr Tyr Phe Asp  
 325 330 335  
 Pro Arg Leu Leu Trp Asp Lys Arg Ala Ser Asp Gly Ile Ala Phe Asn  
 340 345 350  
 Glu Thr Glu Lys Tyr Asp  
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<210> 627  
 <211> 1077  
 <212> DNA  
 <213> Neisseria meningitidis

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gcggcggtta ttttcagcgc gagtattttg gtgccggtac tgaagattgc ggcaatgtcg 780  
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 ttctgcctgg tcgtgattct gacgatgctg tccgcctatt atttcgaccc gcgcctgctt 1020  
 tgggacaaac gcgcttcaga cggcattgct ttcaatgaaa cggaataaaca tgactga 1077

<210> 628

<211> 358

<212> PRT

<213> *Neisseria meningitidis*

<400> 628

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 20 25 30

Gln Asp Tyr Gly Phe Leu Ala Glu Val Met Phe Val Leu Thr Phe Gly  
 35 40 45

Ala Pro Val Leu Phe Leu Leu Leu Cys Leu Tyr Val Tyr Ala Ala Leu  
 50 55 60

Ile Arg Lys Gln Ala Tyr Pro Ala Leu Arg Leu Ala Thr Arg Val Met  
 65 70 75 80

Val Arg Leu Arg Gln Ala Met Met Val Asp Val Phe Phe Val Ser Thr  
 85 90 95

Leu Val Ala Tyr Ile Lys Leu Ser Ser Val Ala Glu Val Arg Phe Gly  
 100 105 110

Pro Ala Phe Tyr Leu Met Phe Ala Leu Ser Val Met Leu Ile Arg Thr  
 115 120 125

Ser Val Ser Val Pro Gln His Trp Val Tyr Phe Gln Ile Gly Arg Leu  
 130 135 140

Thr Gly Asp Asn Ala Val Gln Thr Ala Ser Glu Gly Lys Thr Cys Cys  
 145 150 155 160

Ser Arg Cys Leu Tyr Phe Arg Asp Ser Ala Glu Ser Pro Cys Gly Val  
 165 170 175

Cys Gly Ala Glu Leu Tyr Arg Arg Arg Pro Lys Ser Leu Ser Ile Ser  
 180 185 190

Ser Ala Phe Leu Thr Ala Ala Val Ile Leu Tyr Phe Pro Ala Asn Ile  
 195 200 205

Leu Pro Ile Met Ile Ser Ser Asn Pro Ala Ala Thr Glu Val Asn Thr  
 210 215 220

Ile Leu Asn Gly Ile Ala Tyr Met Trp Asp Glu Gly Asp Arg Leu Ile  
 225 230 235 240  
 Ala Ala Val Ile Phe Ser Ala Ser Ile Leu Val Pro Val Leu Lys Ile  
 245 250 255  
 Ala Ala Met Ser Val Leu Ile Ala Ser Ala Arg Phe Ala Leu Pro Thr  
 260 265 270  
 Gly Ala Lys Lys Leu Ser His Leu Tyr Arg Ile Thr Glu Ala Val Gly  
 275 280 285  
 Arg Trp Ser Met Ile Asp Ile Phe Val Ile Ile Ile Leu Met Cys Ser  
 290 295 300  
 Phe His Thr Tyr Ala Ala Arg Val Ile Pro Gly Ser Ala Ala Val Tyr  
 305 310 315 320  
 Phe Cys Leu Val Val Ile Leu Thr Met Leu Ser Ala Tyr Tyr Phe Asp  
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 340 345 350  
 Glu Thr Glu Lys His Asp  
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<210> 629  
 <211> 1077  
 <212> DNA  
 <213> Neisseria meningitidis

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 ctgtcggtta tgctgattcg gacttcggta tcggttcccc agcattgggt gtattttcaa 420  
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<210> 630  
 <211> 358  
 <212> PRT

<213> Neisseria meningitidis

<400> 630

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Ala	Ala	Ser	Val	Leu	Ser	Leu	Pro	Glu	Met	Met	Arg	Leu	Met	Val	Phe
			20					25					30		
Gln	Asp	Tyr	Gly	Phe	Leu	Ala	Glu	Val	Met	Phe	Val	Leu	Thr	Phe	Gly
		35					40					45			
Ala	Pro	Val	Leu	Phe	Leu	Leu	Leu	Cys	Leu	Tyr	Val	Tyr	Ala	Ala	Leu
	50					55					60				
Ile	Arg	Lys	Gln	Ala	Tyr	Pro	Ala	Leu	Arg	Leu	Ala	Thr	Arg	Val	Met
65					70					75					80
Val	Arg	Leu	Arg	Gln	Ala	Met	Met	Val	Asp	Val	Phe	Phe	Val	Ser	Thr
				85					90					95	
Leu	Val	Ala	Tyr	Ile	Lys	Leu	Ser	Ser	Val	Ala	Glu	Val	Arg	Phe	Gly
			100					105						110	
Ser	Ala	Phe	Tyr	Leu	Met	Phe	Ala	Leu	Ser	Val	Met	Leu	Ile	Arg	Thr
		115					120					125			
Ser	Val	Ser	Val	Pro	Gln	His	Trp	Val	Tyr	Phe	Gln	Ile	Gly	Arg	Leu
	130					135					140				
Thr	Gly	Asp	Asn	Ala	Val	Gln	Thr	Ala	Ser	Glu	Gly	Lys	Thr	Cys	Cys
145					150					155					160
Ser	Arg	Cys	Leu	Tyr	Phe	Arg	Asp	Ser	Ala	Glu	Ser	Pro	Cys	Gly	Val
			165						170					175	
Cys	Gly	Ala	Glu	Leu	Tyr	Arg	Arg	Arg	Pro	Lys	Ser	Leu	Ser	Ile	Ser
			180					185						190	
Ser	Ala	Phe	Leu	Thr	Ala	Ala	Val	Ile	Leu	Tyr	Phe	Pro	Ala	Asn	Ile
		195					200					205			
Leu	Pro	Ile	Met	Ile	Ser	Ser	Asn	Pro	Ala	Ala	Thr	Glu	Val	Asn	Thr
	210					215					220				
Ile	Leu	Asn	Gly	Ile	Ala	Tyr	Met	Trp	Asp	Glu	Gly	Asp	Arg	Leu	Ile
225					230					235					240
Ala	Ala	Val	Ile	Phe	Ser	Ala	Ser	Ile	Leu	Val	Pro	Val	Leu	Lys	Ile
			245						250					255	
Ala	Ala	Met	Ser	Val	Leu	Ile	Ala	Ser	Ala	Arg	Phe	Ala	Leu	Pro	Thr
			260					265					270		
Gly	Ala	Lys	Lys	Leu	Ser	His	Leu	Tyr	Arg	Ile	Thr	Glu	Ala	Val	Gly
		275					280					285			



Arg Trp Ser Met Ile Asp Ile Phe Val Ile Ile Ile Leu Met Cys Ser  
 290 295 300

Phe His Thr Tyr Ala Ala Arg Val Ile Pro Gly Ser Ala Ala Val Tyr  
 305 310 315 320

Phe Cys Leu Val Val Ile Leu Thr Met Leu Ser Ala Tyr Tyr Phe Asp  
 325 330 335

Pro Arg Leu Leu Trp Asp Lys Arg Ala Ser Asp Gly Ile Ala Phe Asn  
 340 345 350

Glu Thr Glu Lys His Asp  
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<210> 631

<211> 1662

<212> DNA

<213> Neisseria gonorrhoeae

<400> 631

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<210> 632

<211> 553

<212> PRT

<213> Neisseria gonorrhoeae

<400> 632

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Ala Leu Ile Ala Gly Gly Trp Leu Trp Val Lys Glu Ile Arg Asn Arg  
35 40 45

Gly Pro Val Val Thr Leu Leu Met Asp Ser Ala Glu Gly Ile Glu Val  
50 55 60

Asn Asn Thr Val Ile Lys Val Leu Ser Ile Asp Val Gly Arg Val Thr  
65 70 75 80

Arg Ile Lys Leu Arg Asp Asp Gln Lys Gly Val Glu Val Thr Ala Gln  
85 90 95

Leu Asn Ala Asp Val Ser Gly Leu Ile Arg Ser Asp Thr Gln Phe Trp  
100 105 110

Val Val Lys Pro Arg Ile Asp Gln Ser Gly Val Thr Gly Leu Gly Thr  
115 120 125

Leu Leu Ser Gly Ser Tyr Ile Ala Phe Thr Pro Gly Lys Ser Gly Glu  
130 135 140

Ala Lys Asp Val Phe Gln Val Gln Asp Ile Pro Pro Val Thr Ala Ile  
145 150 155 160

Gly Gln Ser Gly Leu Arg Leu Asn Leu Ile Gly Lys Asn Asp Arg Ile  
165 170 175

Leu Asn Val Asn Ser Pro Val Leu Tyr Glu Asn Phe Met Val Gly Gln  
180 185 190

Ile Glu Ser Ala His Phe Asp Pro Ser Asp Gln Ser Val His Tyr Thr  
195 200 205

Ile Phe Ile Gln Ser Pro Asn Asp Lys Leu Ile His Ser Ala Ser Arg  
210 215 220

Phe Trp Leu Glu Ser Gly Ile Asn Ile Glu Thr Thr Gly Ser Gly Ile  
225 230 235 240

Lys Leu Asn Ser Ala Pro Leu Pro Ala Leu Leu Ser Gly Ala Ile Ser  
245 250 255

Phe Asp Ser Pro Lys Thr Lys Asn Ser Lys Asn Val Lys Ser Glu Asp  
260 265 270

Ser Phe Thr Leu Tyr Asp Ser Arg Ser Glu Ile Ala Asn Leu Pro Asp  
275 280 285

Asp Arg Ser Leu Tyr Tyr Thr Ala Phe Phe Lys Gln Ser Val Arg Gly

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Glu Ile Asn Ala Asp Glu Gln Ser Lys Glu His Trp Lys Gln Gln Phe 355 360 365		
Gln Thr Ala Leu Asn Lys Gly Leu Thr Ala Thr Ile Ser Ser Asn Asn 370 375 380		
Leu Leu Thr Gly Gly Lys Met Ile Glu Leu Asn Asp Gln Pro Ser Ala 385 390 395 400		
Ser Pro Lys Leu Arg Pro His Thr Val Tyr Ala Gly Asp Thr Val Ile 405 410 415		
Ala Thr Arg Gly Gly Gly Leu Asp Asp Leu Gln Val Lys Leu Ala Asp 420 425 430		
Leu Leu Asp Lys Phe Asn Asn Leu Pro Leu Asp Lys Thr Val Ala Glu 435 440 445		
Leu Asn Gly Ser Leu Ala Glu Leu Lys Ser Ala Leu Lys Ser Ala Asn 450 455 460		
Ala Ala Leu Ser Ser Ile Asp Lys Leu Val Gly Asn Pro Gln Thr Gln 465 470 475 480		
Asn Ile Pro Asn Glu Leu Asn Gln Thr Leu Lys Glu Leu Arg Ile Thr 485 490 495		
Leu Gln Gly Val Ser Pro Gln Ser Pro Ile Tyr Gly Asp Val Gln Asn 500 505 510		
Thr Leu Gln Ser Leu Asp Lys Thr Leu Lys Asp Val Gln Pro Val Ile 515 520 525		
Asn Thr Leu Lys Glu Lys Pro Asn Ala Leu Ile Phe Asn Asn Ser Ser 530 535 540		
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<210> 633

<211> 1662

<212> DNA

<213> Neisseria meningitidis

<400> 633

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<210> 634  
 <211> 553  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 634

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          20              25              30

Ala Leu Ile Ala Gly Gly Trp Leu Trp Val Lys Glu Ile Arg Asn Arg
          35              40              45

Gly Pro Val Val Thr Leu Leu Met Asp Ser Ala Glu Gly Ile Glu Val
          50              55              60

Asn Asn Thr Val Ile Lys Val Leu Ser Ile Asp Val Gly Arg Val Thr
          65              70              75              80

Arg Ile Lys Leu Arg Asp Asp Gln Lys Gly Val Glu Val Thr Ala Gln
          85              90              95

Leu Asn Ala Asp Val Ser Gly Leu Ile Arg Ser Asp Thr Gln Phe Trp
          100              105              110

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Val Val Lys Pro Arg Ile Asp Gln Ser Gly Val Thr Gly Leu Gly Thr  
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 Leu Leu Ser Gly Ser Tyr Ile Ala Phe Thr Pro Gly Lys Ser Asp Glu  
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 Ala Lys Asp Val Phe Gln Val Gln Asp Ile Pro Pro Val Thr Ala Ile  
 145 150 155 160  
 Gly Gln Ser Gly Leu Arg Leu Asn Leu Ile Gly Lys Asn Asp Arg Ile  
 165 170 175  
 Leu Asn Val Asn Ser Pro Val Leu Tyr Glu Asn Phe Met Val Gly Gln  
 180 185 190  
 Val Glu Ser Ala His Phe Asp Pro Ser Asp Gln Ser Val His Tyr Thr  
 195 200 205  
 Ile Phe Ile Gln Ser Pro Asn Asp Lys Leu Ile His Ser Ala Ser Arg  
 210 215 220  
 Phe Trp Leu Glu Ser Gly Ile Asn Ile Glu Thr Thr Gly Ser Gly Ile  
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 Lys Leu Asn Ser Ala Pro Leu Pro Ala Leu Leu Ser Gly Ala Ile Ser  
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 Phe Asp Ser Pro Lys Thr Lys Asn Ser Lys Asn Val Lys Ser Glu Asp  
 260 265 270  
 Ser Phe Thr Leu Tyr Asp Ser Arg Ser Glu Val Ala Asn Leu Pro Asp  
 275 280 285  
 Asp Arg Ser Leu Tyr Tyr Thr Ala Phe Phe Lys Gln Ser Val Arg Gly  
 290 295 300  
 Leu Thr Val Gly Ser Pro Val Glu Tyr Lys Gly Leu Asn Val Gly Val  
 305 310 315 320  
 Val Ser Asp Val Pro Tyr Phe Asp Arg Asn Asp Ser Leu His Leu Phe  
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 Glu Asn Gly Trp Ile Pro Val Arg Ile Arg Ile Glu Pro Ser Arg Leu  
 340 345 350  
 Glu Ile Asn Ala Asp Glu Gln Ser Lys Glu His Trp Lys Gln Gln Phe  
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 Gln Thr Ala Leu Asn Lys Gly Leu Thr Ala Thr Ile Ser Ser Asn Asn  
 370 375 380  
 Leu Leu Thr Gly Ser Lys Met Ile Glu Leu Asn Asp Gln Pro Ser Ala  
 385 390 395 400  
 Ser Pro Lys Leu Arg Pro His Thr Val Tyr Ala Gly Asp Thr Val Ile  
 405 410 415

Ala Thr Gln Gly Gly Gly Leu Asp Asp Leu Gln Val Lys Leu Ala Asp  
420 425 430

Leu Leu Asp Lys Phe Asp Lys Leu Pro Leu Asp Lys Thr Val Ala Glu  
435 440 445

Leu Asn Gly Ser Leu Ala Glu Leu Lys Ser Thr Leu Lys Ser Ala Asn  
450 455 460

Ala Ala Leu Ser Ser Ile Asp Lys Leu Val Gly Lys Pro Gln Thr Gln  
465 470 475 480

Asn Ile Pro Asn Glu Leu Asn Gln Thr Leu Lys Glu Leu Arg Thr Thr  
485 490 495

Leu Gln Gly Val Ser Pro Gln Ser Pro Ile Tyr Gly Asp Val Gln Asn  
500 505 510

Thr Leu Gln Ser Leu Asp Lys Thr Leu Lys Asp Val Gln Pro Val Ile  
515 520 525

Asn Thr Leu Lys Glu Lys Pro Asn Ala Leu Ile Phe Asn Ser Ser Ser  
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Lys Asp Pro Ile Pro Lys Gly Ser Arg  
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<210> 635  
<211> 1662  
<212> DNA  
<213> Neisseria meningitidis

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gtatccggcc tcatccgcag cgatacccag ttttgggtgg tcaagccgcg tatcgaccaa 360  
agcggcgtaa ccggtttggg tacgctgctt tcgggttcgt acatcgccct tacacccggc 420  
aaaagcgacg aggcaaaaga cgtgttccaa gtgcaggaca ttccgcccgt taccgccatc 480  
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tcgcccagc tgcgaccgca taccgtttat gcaggcgata ccgttatcgc gaccagggc 1260  
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tcgcctcaat cgcctatcta cggcgacgta caaaatacgc tgcaaagttt ggacaaaacc 1560
ttaaagacg ttcaaccgt cattaacact ttgaaagaaa aaccaacgc gctgattttc 1620
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<210> 636  
 <211> 553  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 636

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			20					25					30		
Ala	Leu	Ile	Ala	Gly	Gly	Trp	Leu	Trp	Val	Lys	Glu	Ile	Arg	Asn	Arg
	35						40					45			
Gly	Pro	Val	Val	Thr	Leu	Leu	Met	Asp	Ser	Ala	Glu	Gly	Ile	Glu	Val
	50					55					60				
Asn	Asn	Thr	Val	Ile	Lys	Val	Leu	Ser	Ile	Asp	Val	Gly	Arg	Val	Thr
65					70					75				80	
Arg	Ile	Lys	Leu	Arg	Asp	Asp	Gln	Lys	Gly	Val	Glu	Val	Thr	Ala	Gln
			85						90					95	
Leu	Asn	Ala	Asp	Val	Ser	Gly	Leu	Ile	Arg	Ser	Asp	Thr	Gln	Phe	Trp
			100					105					110		
Val	Val	Lys	Pro	Arg	Ile	Asp	Gln	Ser	Gly	Val	Thr	Gly	Leu	Gly	Thr
		115					120					125			
Leu	Leu	Ser	Gly	Ser	Tyr	Ile	Ala	Phe	Thr	Pro	Gly	Lys	Ser	Asp	Glu
	130					135					140				
Ala	Lys	Asp	Val	Phe	Gln	Val	Gln	Asp	Ile	Pro	Pro	Val	Thr	Ala	Ile
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Gly	Gln	Ser	Gly	Leu	Arg	Leu	Asn	Leu	Ile	Gly	Lys	Asn	Asp	Arg	Ile
			165						170					175	
Leu	Asn	Val	Asn	Ser	Pro	Val	Leu	Tyr	Glu	Asn	Phe	Met	Val	Gly	Gln
			180					185					190		
Val	Glu	Ser	Ala	His	Phe	Asp	Pro	Ser	Asp	Gln	Ser	Val	His	Tyr	Thr
		195					200					205			
Ile	Phe	Ile	Gln	Ser	Pro	Asn	Asp	Lys	Leu	Ile	His	Ser	Ala	Ser	Arg
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Phe	Trp	Leu	Glu	Ser	Gly	Ile	Asn	Ile	Glu	Thr	Thr	Gly	Ser	Gly	Ile

225		230		235		240									
Lys	Leu	Asn	Ser	Ala	Pro	Leu	Pro	Ala	Leu	Leu	Ser	Gly	Ala	Ile	Ser
				245					250					255	
Phe	Asp	Ser	Pro	Lys	Thr	Lys	Asn	Ser	Lys	Asn	Val	Lys	Ser	Glu	Asp
			260					265					270		
Ser	Phe	Thr	Leu	Tyr	Asp	Ser	Arg	Ser	Glu	Val	Ala	Asn	Leu	Pro	Asp
		275					280					285			
Asp	Arg	Ser	Leu	Tyr	Tyr	Thr	Ala	Phe	Phe	Lys	Gln	Ser	Val	Arg	Gly
	290					295					300				
Leu	Thr	Val	Gly	Ser	Pro	Val	Glu	Tyr	Lys	Gly	Leu	Asn	Val	Gly	Val
305					310					315				320	
Val	Ser	Asp	Val	Pro	Tyr	Phe	Asp	Arg	Asn	Asp	Ser	Leu	His	Leu	Phe
			325						330					335	
Glu	Asn	Gly	Trp	Ile	Pro	Val	Arg	Ile	Arg	Ile	Glu	Pro	Ser	Arg	Leu
		340						345					350		
Glu	Ile	Asn	Ala	Asp	Glu	Gln	Ser	Lys	Glu	His	Trp	Lys	Gln	Gln	Phe
		355					360					365			
Gln	Thr	Ala	Leu	Asn	Lys	Gly	Leu	Thr	Ala	Thr	Ile	Ser	Ser	Asn	Asn
	370					375					380				
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385					390					395					400
Ser	Pro	Lys	Leu	Arg	Pro	His	Thr	Val	Tyr	Ala	Gly	Asp	Thr	Val	Ile
			405						410					415	
Ala	Thr	Gln	Gly	Gly	Gly	Leu	Asp	Asp	Leu	Gln	Val	Lys	Leu	Ala	Asp
		420						425					430		
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		435					440					445			
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	450					455					460				
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Asn	Ile	Pro	Asn	Glu	Leu	Asn	Gln	Thr	Leu	Lys	Glu	Leu	Arg	Thr	Thr
			485					490					495		
Leu	Gln	Gly	Val	Ser	Pro	Gln	Ser	Pro	Ile	Tyr	Gly	Asp	Val	Gln	Asn
			500					505					510		
Thr	Leu	Gln	Ser	Leu	Asp	Lys	Thr	Leu	Lys	Asp	Val	Gln	Pro	Val	Ile
		515					520					525			
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530

535

540

Lys Asp Pro Ile Pro Lys Gly Ser Arg  
545 550

&lt;210&gt; 637

&lt;211&gt; 1539

&lt;212&gt; DNA

&lt;213&gt; Neisseria gonorrhoeae

&lt;400&gt; 637

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ttggcggcaa gtttgacga tgccgcttac caaacagcag gcgcaaccgt tgccgacaaa 180
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&lt;210&gt; 638

&lt;211&gt; 512

&lt;212&gt; PRT

&lt;213&gt; Neisseria gonorrhoeae

&lt;400&gt; 638

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  1             5             10             15

Ala Cys Thr Pro Ala Thr Val Ala Leu Leu Gly Lys Leu Gly Phe Glu
      20             25             30

Thr Val Val Glu Ser Gly Ala Gly Leu Ala Ala Ser Leu Asp Asp Ala
      35             40             45

Ala Tyr Gln Thr Ala Gly Ala Thr Val Ala Asp Lys Ala Ala Val Trp
      50             55             60

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Ala	Cys	Pro	Leu	Ile	Tyr	Lys	Val	Asn	Ala	Pro	Ser	Glu	Gly	Glu	Leu	
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Pro	Leu	Leu	Lys	Glu	Gly	Gln	Thr	Ile	Val	Ser	Phe	Leu	Trp	Pro	Arg	
			85						90					95		
Gln	Asn	Glu	Ala	Leu	Val	Glu	Ala	Leu	Arg	Ala	Lys	Lys	Val	Asn	Ala	
			100					105					110			
Leu	Ala	Met	Asp	Met	Val	Pro	Arg	Ile	Ser	Arg	Ala	Gln	Ala	Leu	Asp	
		115					120					125				
Ala	Leu	Ser	Ser	Met	Ala	Asn	Ile	Ser	Gly	Tyr	Arg	Ala	Val	Ile	Glu	
	130					135					140					
Ala	Ala	Asn	Ala	Phe	Gly	Arg	Phe	Phe	Thr	Gly	Gln	Ile	Thr	Ala	Ala	
145					150					155					160	
Gly	Lys	Val	Pro	Pro	Ala	Gln	Val	Leu	Val	Ile	Gly	Ala	Gly	Val	Ala	
			165					170						175		
Gly	Leu	Ala	Ala	Ile	Gly	Thr	Ala	Asn	Ser	Leu	Gly	Ala	Val	Val	Arg	
		180						185					190			
Ala	Phe	Asp	Thr	Arg	Leu	Glu	Val	Ala	Glu	Gln	Ile	Glu	Ser	Met	Gly	
		195					200					205				
Gly	Lys	Phe	Leu	Lys	Leu	Asp	Phe	Leu	Gln	Glu	Ser	Gly	Gly	Ser	Gly	
	210					215					220					
Asp	Gly	Tyr	Ala	Lys	Val	Met	Ser	Asp	Glu	Phe	Ile	Ala	Ala	Glu	Met	
225					230					235					240	
Lys	Leu	Phe	Ala	Glu	Gln	Ala	Lys	Glu	Val	Asp	Ile	Ile	Ile	Thr	Thr	
			245					250						255		
Ala	Ala	Ile	Pro	Gly	Lys	Pro	Ala	Pro	Lys	Leu	Ile	Thr	Lys	Glu	Met	
			260					265					270			
Val	Glu	Ser	Met	Lys	Ser	Gly	Ser	Val	Ile	Val	Asp	Leu	Ala	Ala	Thr	
		275					280					285				
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Asn	Gly	Val	Lys	Ile	Ile	Gly	Tyr	Thr	Asp	Met	Ala	Asn	Arg	Leu	Ala	
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Gly	Gln	Ser	Ser	Gln	Leu	Tyr	Ala	Thr	Asn	Leu	Val	Asn	Leu	Thr	Lys	
				325					330					335		
Leu	Leu	Ser	Pro	Asn	Lys	Asp	Gly	Glu	Ile	Thr	Leu	Asp	Phe	Glu	Asp	
			340					345					350			
Val	Ile	Ile	Arg	Asn	Met	Thr	Val	Thr	Arg	Asp	Gly	Glu	Ile	Thr	Phe	
		355					360					365				

Pro	Pro	Pro	Pro	Ile	Gln	Val	Ser	Ala	Arg	Pro	Gln	Gln	Thr	Pro	Ser
370						375					380				
Glu	Lys	Ala	Ala	Pro	Ala	Ala	Lys	Pro	Glu	Pro	Lys	Pro	Val	Pro	Leu
385					390					395					400
Trp	Lys	Lys	Leu	Ala	Pro	Ala	Ala	Ile	Ala	Ala	Val	Leu	Val	Leu	Trp
			405						410					415	
Val	Gly	Ala	Val	Ala	Pro	Ala	Ala	Phe	Leu	Asn	His	Phe	Ile	Val	Phe
		420						425					430		
Val	Leu	Ala	Cys	Val	Ile	Gly	Tyr	His	Val	Val	Trp	Asn	Val	Ser	His
	435						440					445			
Ser	Leu	His	Thr	Pro	Leu	Met	Ser	Val	Thr	Asn	Ala	Ile	Ser	Gly	Ile
	450					455					460				
Met	Val	Val	Gly	Ala	Leu	Leu	Gln	Ile	Gly	Gln	Gly	Asn	Gly	Phe	Val
465					470					475					480
Ser	Leu	Leu	Ser	Phe	Val	Ala	Ile	Leu	Ile	Ala	Gly	Ile	Asn	Ile	Phe
			485						490					495	
Gly	Gly	Phe	Ala	Val	Thr	Arg	Arg	Met	Leu	Asn	Met	Phe	Lys	Lys	Gly
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<210> 639  
 <211> 1542  
 <212> DNA  
 <213> Neisseria meningitidis

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 aagctctttg ccgagcaggc gaaagaagtg gacatcatca tcaccaccgc cgccattccg 780  
 ggcaaaccgc cgcccaagct gattacaaaa gaaatggtgg aaagcatgaa atccggctcc 840  
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 ccgaacaaag acggcgaaat cacgttggac ttcgaagacg tgattatccg caacatgacc 1080  
 gttaccacgc acggcgaaat caccttcccgc cctccgcca ttcaagtttc cgcccagccc 1140

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<210> 640
<211> 513
<212> PRT
<213> Neisseria meningitidis

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      20             25             30

Thr Val Val Glu Ser Gly Ala Gly Leu Ala Ala Ser Leu Asp Asp Ala
      35             40             45

Ala Tyr Gln Thr Ala Gly Ala Thr Val Ala Asp Lys Ala Ala Val Trp
      50             55             60

Val Cys Pro Leu Ile Tyr Lys Val Asn Ala Pro Ser Glu Gln Glu Leu
      65             70             75             80

Pro Leu Leu Asn Glu Gly Gln Thr Ile Val Ser Phe Leu Trp Pro Arg
      85             90             95

Gln Asn Glu Ala Leu Val Glu Ala Leu Arg Ala Lys Lys Val Asn Ala
      100            105            110

Leu Ala Met Asp Met Val Pro Arg Ile Ser Arg Ala Gln Ala Leu Asp
      115            120            125

Ala Leu Ser Ser Met Ala Asn Ile Ser Gly Tyr Arg Ala Val Ile Glu
      130            135            140

Ala Ala Asn Ala Phe Gly Arg Phe Phe Thr Gly Gln Ile Thr Ala Ala
      145            150            155            160

Gly Lys Val Pro Pro Ala Gln Val Leu Val Ile Gly Ala Gly Val Ala
      165            170            175

Gly Leu Ala Ala Ile Gly Thr Ala Asn Ser Leu Gly Ala Val Val Arg
      180            185            190

Ala Phe Asp Thr Arg Leu Glu Val Ala Glu Gln Ile Glu Ser Met Gly
      195            200            205

Gly Lys Phe Leu Lys Leu Asp Phe Pro Gln Glu Ser Gly Gly Ser Gly
      210            215            220

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Asp Gly Tyr Ala Lys Val Met Ser Asp Glu Phe Ile Ala Ala Glu Met  
 225 230 235 240  
 Lys Leu Phe Ala Glu Gln Ala Lys Glu Val Asp Ile Ile Ile Thr Thr  
 245 250 255  
 Ala Ala Ile Pro Gly Lys Pro Ala Pro Lys Leu Ile Thr Lys Glu Met  
 260 265 270  
 Val Glu Ser Met Lys Ser Gly Ser Val Ile Val Asp Leu Ala Ala Ala  
 275 280 285  
 Thr Gly Gly Asn Cys Glu Leu Thr Arg Pro Gly Glu Leu Ser Val Thr  
 290 295 300  
 Gly Asn Gly Val Lys Ile Ile Gly Tyr Thr Asp Met Ala Asn Arg Leu  
 305 310 315 320  
 Ala Gly Gln Ser Ser Gln Leu Tyr Ala Thr Asn Leu Val Asn Leu Thr  
 325 330 335  
 Lys Leu Leu Ser Pro Asn Lys Asp Gly Glu Ile Thr Leu Asp Phe Glu  
 340 345 350  
 Asp Val Ile Ile Arg Asn Met Thr Val Thr His Asp Gly Glu Ile Thr  
 355 360 365  
 Phe Pro Pro Pro Pro Ile Gln Val Ser Ala Gln Pro Gln Gln Thr Pro  
 370 375 380  
 Ser Glu Lys Ala Val Pro Ala Ala Lys Pro Glu Pro Lys Pro Val Pro  
 385 390 395 400  
 Leu Trp Lys Lys Leu Ala Pro Ala Val Ile Ala Ala Val Leu Val Leu  
 405 410 415  
 Trp Val Gly Ala Val Ala Pro Ala Ala Phe Leu Asn His Phe Ile Val  
 420 425 430  
 Phe Val Leu Ala Cys Val Ile Gly Tyr Tyr Val Val Trp Asn Val Ser  
 435 440 445  
 His Ser Leu His Thr Pro Leu Met Ser Val Thr Asn Ala Ile Ser Gly  
 450 455 460  
 Ile Ile Val Val Gly Ala Leu Leu Gln Ile Gly Gln Gly Asn Gly Phe  
 465 470 475 480  
 Val Ser Leu Leu Ser Phe Val Ala Ile Leu Ile Ala Gly Ile Asn Ile  
 485 490 495  
 Phe Gly Gly Phe Ala Val Thr Arg Arg Met Leu Asn Met Phe Lys Lys  
 500 505 510

Gly

<210> 641  
 <211> 1541  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 641  
 atgaaaatcg gtatcccacg tgagtcatta tccggcgaaa cccgcgctcg ctgtacgccc 60  
 gccaccgtcg ccctgctggg caaactgggc tttgaaaccg ttgtcgaaag cggcgaggt 120  
 ttggcgga gtttgacga tgccgcttac caagcagcag gcgcaaccgt tgccgacaaa 180  
 gcagcgggtt gggcataccc tttaatttat aagggttaacg cgccgtccga agacgagctg 240  
 ccgctgctca aagaaggaca gaccatcgct agcttcctgt ggccgcgcca aaacgaggct 300  
 ttggtcgaag ccttgcgcg ccaagaaagt aacgcgctgg caatggacat ggtgccccgc 360  
 atttcgcgcg cgcaggcttt ggacgntttg tcttngatgg caaacatcag cggctaccgc 420  
 gccgtgattg aagccgcca cgccttcggc cgtttnttca ccggccaaat tactgccgca 480  
 ggcaaagtgc cggccgcgca ggttttggtg attggtgcag gtgtggcagg tttggcgcg 540  
 atcgggtacg caaactcgct cggcgcgatg gtacgcgtgt tcgatacccg cctgaagtgg 600  
 cggaacaatt agaatcgatg ggcggcaagt tcctgaaact cgacttcccg caagaatcgg 660  
 gcggcagcgg cgacggctac gccaaagtga tgagcgacga atttatcgcc gccgagatga 720  
 agctttttgc cgagcaggcg aaagaagtgg acatcatcat caccaccgcc gccattccgg 780  
 gcaaacccgc gcccaagcnn ntnancaaag aaatggtcga aagcatgaaa cccggctccg 840  
 tcatcgctga tttggcgcg gcgacgggcg gcaactgcga actcaccaaa cagggcgaat 900  
 tgttcgtaac cggaacggc gtgaaaatca tccgctacac cgacatggca aaccgccttg 960  
 ccggacagtc ttcgcagctt tacgccacca acttgggtcaa cctgaccaag ctgttaagcc 1020  
 cgaacaaaga cggcgaaatc acgctggact tcgaagacgt gattatccgc aacatgaccg 1080  
 ttaccgcgca cggcgaaatc accttcccg ctcgcgcgat tcaagtttcc gcccaaccgc 1140  
 agcaaacgcc gtctgaaaaa gccgcgcctg ccgccaagcc cgaaccgaaa cccgttcccc 1200  
 tgtggaaaaa actcgcgccc gccntnatcg ccgcgctgtt ggtactgtgg gtcggcgcg 1260  
 tcgacccgc agcattcctg aaccacttta tcgtcttcgt cctgcgctgc gtcacggt 1320  
 actatgtcgt ttggaacgtc agccactcgc tgcacacacc gctgatgtcg gtgaccaacg 1380  
 ccatttccgg catcatcgtc gtcggcgcg tgctgcaaat cggtcagggc aacggcttcg 1440  
 tttcgctgct gtcgtttgtt gccatcctga ttgccagcat caacatcttc ggcggttct 1500  
 ttgtaacgcg gcggatgctg aatatgttta ggaaagggt a 1541

<210> 642  
 <211> 513  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 642  
 Met Lys Ile Gly Ile Pro Arg Glu Ser Leu Ser Gly Glu Thr Arg Val  
 1 5 10 15  
 Ala Cys Thr Pro Ala Thr Val Ala Leu Leu Gly Lys Leu Gly Phe Glu  
 20 25 30  
 Thr Val Val Glu Ser Gly Ala Gly Leu Ala Ala Ser Leu Asp Asp Ala  
 35 40 45  
 Ala Tyr Gln Ala Ala Gly Ala Thr Val Ala Asp Lys Ala Ala Val Trp  
 50 55 60  
 Ala Tyr Pro Leu Ile Tyr Lys Val Asn Ala Pro Ser Glu Asp Glu Leu  
 65 70 75 80

Pro	Leu	Leu	Lys	Glu	Gly	Gln	Thr	Ile	Val	Ser	Phe	Leu	Trp	Pro	Arg	
				85					90					95		
Gln	Asn	Glu	Ala	Leu	Val	Glu	Ala	Leu	Arg	Ala	Lys	Lys	Val	Asn	Ala	
			100					105					110			
Leu	Ala	Met	Asp	Met	Val	Pro	Arg	Ile	Ser	Arg	Ala	Gln	Ala	Leu	Asp	
		115					120					125				
Xaa	Leu	Ser	Xaa	Met	Ala	Asn	Ile	Ser	Gly	Tyr	Arg	Ala	Val	Ile	Glu	
	130					135					140					
Ala	Ala	Asn	Ala	Phe	Gly	Arg	Xaa	Phe	Thr	Gly	Gln	Ile	Thr	Ala	Ala	
145					150					155					160	
Gly	Lys	Val	Pro	Pro	Ala	Gln	Val	Leu	Val	Ile	Gly	Ala	Gly	Val	Ala	
				165				170						175		
Gly	Leu	Ala	Ala	Ile	Gly	Thr	Ala	Asn	Ser	Leu	Gly	Ala	Val	Val	Arg	
		180						185					190			
Val	Phe	Asp	Thr	Arg	Leu	Xaa	Val	Ala	Glu	Gln	Leu	Glu	Ser	Met	Gly	
		195					200					205				
Gly	Lys	Phe	Leu	Lys	Leu	Asp	Phe	Pro	Gln	Glu	Ser	Gly	Gly	Ser	Gly	
	210					215					220					
Asp	Gly	Tyr	Ala	Lys	Val	Met	Ser	Asp	Glu	Phe	Ile	Ala	Ala	Glu	Met	
225					230					235					240	
Lys	Leu	Phe	Ala	Glu	Gln	Ala	Lys	Glu	Val	Asp	Ile	Ile	Ile	Thr	Thr	
			245					250						255		
Ala	Ala	Ile	Pro	Gly	Lys	Pro	Ala	Pro	Lys	Xaa	Xaa	Xaa	Lys	Glu	Met	
			260					265						270		
Val	Glu	Ser	Met	Lys	Pro	Gly	Ser	Val	Ile	Val	Asp	Leu	Ala	Ala	Ala	
		275					280					285				
Thr	Gly	Gly	Asn	Cys	Glu	Leu	Thr	Lys	Gln	Gly	Glu	Leu	Phe	Val	Thr	
	290					295					300					
Gly	Asn	Gly	Val	Lys	Ile	Ile	Gly	Tyr	Thr	Asp	Met	Ala	Asn	Arg	Leu	
305					310					315					320	
Ala	Gly	Gln	Ser	Ser	Gln	Leu	Tyr	Ala	Thr	Asn	Leu	Val	Asn	Leu	Thr	
				325					330					335		
Lys	Leu	Leu	Ser	Pro	Asn	Lys	Asp	Gly	Glu	Ile	Thr	Leu	Asp	Phe	Glu	
			340					345					350			
Asp	Val	Ile	Ile	Arg	Asn	Met	Thr	Val	Thr	Arg	Asp	Gly	Glu	Ile	Thr	
		355					360					365				
Phe	Pro	Pro	Pro	Pro	Ile	Gln	Val	Ser	Ala	Gln	Pro	Gln	Gln	Thr	Pro	
	370					375					380					

Ser Glu Lys Ala Ala Pro Ala Ala Lys Pro Glu Pro Lys Pro Val Pro  
 385 390 395 400  
 Leu Trp Lys Lys Leu Ala Pro Ala Xaa Ile Ala Ala Val Leu Val Leu  
 405 410 415  
 Trp Val Gly Ala Val Ala Pro Ala Ala Phe Leu Asn His Phe Ile Val  
 420 425 430  
 Phe Val Leu Ala Cys Val Ile Gly Tyr Tyr Val Val Trp Asn Val Ser  
 435 440 445  
 His Ser Leu His Thr Pro Leu Met Ser Val Thr Asn Ala Ile Ser Gly  
 450 455 460  
 Ile Ile Val Val Gly Ala Leu Leu Gln Ile Gly Gln Gly Asn Gly Phe  
 465 470 475 480  
 Val Ser Leu Leu Ser Phe Val Ala Ile Leu Ile Ala Ser Ile Asn Ile  
 485 490 495  
 Phe Gly Gly Phe Phe Val Thr Arg Arg Met Leu Asn Met Phe Arg Lys  
 500 505 510

Gly

<210> 643  
 <211> 384  
 <212> DNA

<213> *Neisseria gonorrhoeae*

<400> 643  
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 tatgcaaaaa aagcggggcgg attccggttt aaagacaacc acaatcctcg cggtttttctg 120  
 gcacatacgc aaggcgcagc cgcccggtgcc cacgcccgcg agcaaaacgg ttttgaagcc 180  
 tttgcaccgt ttgcccgcgc cgttttgacg gcacacgcaa ccggcaatgc cggacaagca 240  
 accgtcaaca cgcttgccgg attgttcacg ctgttccgcc tcgcctttat ctggtgctac 300  
 atcgagagca aagcagcatt gcgctcgctg atgtggggcgg gcggatttgc ctgcaccgtc 360  
 ggactgtttg tcgcggtgc ttga 384

<210> 644  
 <211> 127  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 644  
 Met Thr Phe Ala Tyr Trp Cys Ile Leu Ile Ala Cys Leu Leu Pro Leu  
 1 5 10 15  
 Phe Cys Ala Ala Tyr Ala Lys Lys Ala Gly Gly Phe Arg Phe Lys Asp  
 20 25 30



Asn His Asn Pro Arg Gly Phe Leu Ala His Thr Gln Gly Ala Ala Ala  
           35                                  40                                  45  
 Arg Ala His Ala Ala Gln Gln Asn Gly Phe Glu Ala Phe Ala Pro Phe  
           50                                  55                                  60  
 Ala Ala Ala Val Leu Thr Ala His Ala Thr Gly Asn Ala Gly Gln Ala  
           65                                  70                                  75                                  80  
 Thr Val Asn Thr Leu Ala Gly Leu Phe Ile Leu Phe Arg Leu Ala Phe  
                                   85                                  90                                  95  
 Ile Trp Cys Tyr Ile Ala Asp Lys Ala Ala Leu Arg Ser Leu Met Trp  
                                   100                                  105                                  110  
 Ala Gly Gly Phe Ala Cys Thr Val Gly Leu Phe Val Ala Ala Ala  
           115                                  120                                  125

<210> 645  
 <211> 384  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 645  
 atgactttcg cctattggtg tattctgatt gcctgcctat tgccgctttt ttgtgcggcg 60  
 tatgccaaaa aagcgggcgg attccggttt aaagacaacc acaatccgcg cggttttcta 120  
 gcgcacacgc aaggcgagc cgcccggtgc cagcccgcac agcaaaacgg ttttgaagcc 180  
 tttgcaccgt ttgccgcgc cgttttgacg gcacacgcaa ccggcaatgc ggcgcaatcg 240  
 accatcaaca cgcttgctg cctgttcac cgtttccgccc tcgcctttat ctggtgctat 300  
 atcgccgaca aagccgctat gcgctcactg atgtgggcag gcggatttgc ctgcaccgtc 360  
 gggctgtttg tcgcggctgc ttga 384

<210> 646  
 <211> 127  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 646  
 Met Thr Phe Ala Tyr Trp Cys Ile Leu Ile Ala Cys Leu Leu Pro Leu  
           1                                  5                                  10                                  15  
 Phe Cys Ala Ala Tyr Ala Lys Lys Ala Gly Gly Phe Arg Phe Lys Asp  
                                   20                                  25                                  30  
 Asn His Asn Pro Arg Gly Phe Leu Ala His Thr Gln Gly Ala Ala Ala  
           35                                  40                                  45  
 Arg Ala His Ala Ala Gln Gln Asn Gly Phe Glu Ala Phe Ala Pro Phe  
           50                                  55                                  60  
 Ala Ala Ala Val Leu Thr Ala His Ala Thr Gly Asn Ala Ala Gln Ser  
           65                                  70                                  75                                  80  
 Thr Ile Asn Thr Leu Ala Cys Leu Phe Ile Leu Phe Arg Leu Ala Phe

85

90

95

Ile Trp Cys Tyr Ile Ala Asp Lys Ala Ala Met Arg Ser Leu Met Trp  
 100 105 110

Ala Gly Gly Phe Ala Cys Thr Val Gly Leu Phe Val Ala Ala Ala  
 115 120 125

&lt;210&gt; 647

&lt;211&gt; 384

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;400&gt; 647

atgacttttcg cctattggtg tattctgatt gcctacctat tgccgctttt ttgtgcggcg 60  
 tatgccaataa aagcgggacg attccggttt aaagacaacc acaatccgcg cgattttctg 120  
 gcgcgcacgc aaggcacagc cgcccgtgcc cacgccgcgc agcaaaacgg ttttgaagcc 180  
 tttgcaccgt ttgcagccgc cgttttgacg gcacacgcaa ccggcaatgc cggacaagca 240  
 accgtcaaca cgcttgccgg cctgttcacg ctgttccgcc tcgcctttat ctgggtgctac 300  
 atcgagacaa aagcagcatt acgctcgctg atgtgggtgg gcggatttgt ctgcaccgctc 360  
 gggctgtttg tcgtggctgc ttga 384

&lt;210&gt; 648

&lt;211&gt; 127

&lt;212&gt; PRT

<213> *Neisseria meningitidis*

&lt;400&gt; 648

Met Thr Phe Ala Tyr Trp Cys Ile Leu Ile Ala Tyr Leu Leu Pro Leu  
 1 5 10 15

Phe Cys Ala Ala Tyr Ala Lys Lys Ala Gly Gly Phe Arg Phe Lys Asp  
 20 25 30

Asn His Asn Pro Arg Asp Phe Leu Ala Arg Thr Gln Gly Thr Ala Ala  
 35 40 45

Arg Ala His Ala Ala Gln Gln Asn Gly Phe Glu Ala Phe Ala Pro Phe  
 50 55 60

Ala Ala Ala Val Leu Thr Ala His Ala Thr Gly Asn Ala Gly Gln Ala  
 65 70 75 80

Thr Val Asn Thr Leu Ala Gly Leu Phe Ile Leu Phe Arg Leu Ala Phe  
 85 90 95

Ile Trp Cys Tyr Ile Ala Asp Lys Ala Ala Leu Arg Ser Leu Met Trp  
 100 105 110

Val Gly Gly Phe Val Cys Thr Val Gly Leu Phe Val Val Ala Ala  
 115 120 125

&lt;210&gt; 649

&lt;211&gt; 582

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 649

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atgaggaacg aggaaaaaacg cggcctgcgc cgcgaattgc gcggggcggcg ttgcgaaatg 60
gggcgagacg tgcggggcggc ggcggcgata aaaatcaacc gcctgctcaa acgttatatc 120
aagcgcggtc ggaaaatcgg cgtgtattgg ccgatgggca aggaattgcg tttgggcggc 180
tttgtccgcg cggcgcaaaa acgcggcgca aaactctatc tgccttatat cgaaccgcac 240
acgcggcgga tgtggtttac gccgtatcct gaacgcggaa tggaacggga acgcaagcgc 300
ggtagggcga agctgcatgt ccctcagttt gcagggcgca aaatccgcgt gcacggtttg 360
tcggtattgc tcgtcccgtt tgcggcgata gaccgcgaag gctaccgttt ggggcaggca 420
ggcggctatt acgatgcgac gctttcggcg atgaaatacc gtttgcaggc gaaaaccgtg 480
ggcgtgggct ttgcctgccg gttggtggac aggctcccac gcgaggcgca cgacctgccg 540
ctggacggtt ttgtatcgga agcggggata ttgtgttttt ag 582
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<210> 650

<211> 193

<212> PRT

<213> *Neisseria gonorrhoeae*

<400> 650

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Met Arg Asn Glu Glu Lys Arg Ala Leu Arg Arg Glu Leu Arg Gly Arg
  1                      5                      10                      15

Arg Ser Gln Met Gly Arg Asp Val Arg Ala Ala Ala Ala Ile Lys Ile
          20                      25                      30

Asn Arg Leu Leu Lys Arg Tyr Ile Lys Arg Gly Arg Lys Ile Gly Val
          35                      40                      45

Tyr Trp Pro Met Gly Lys Glu Leu Arg Leu Gly Gly Phe Val Arg Ala
          50                      55                      60

Ala Gln Lys Arg Gly Ala Lys Leu Tyr Leu Pro Tyr Ile Glu Pro His
          65                      70                      75                      80

Thr Arg Arg Met Trp Phe Thr Pro Tyr Pro Glu Arg Gly Met Glu Arg
          85                      90                      95

Glu Arg Lys Arg Gly Arg Ala Lys Leu His Val Pro Gln Phe Ala Gly
          100                     105                     110

Arg Lys Ile Arg Val His Gly Leu Ser Val Leu Leu Val Pro Leu Val
          115                     120                     125

Gly Ile Asp Arg Glu Gly Tyr Arg Leu Gly Gln Ala Gly Gly Tyr Tyr
          130                     135                     140

Asp Ala Thr Leu Ser Ala Met Lys Tyr Arg Leu Gln Ala Lys Thr Val
          145                     150                     155                     160

Gly Val Gly Phe Ala Cys Gln Leu Val Asp Arg Leu Pro Arg Glu Ala
          165                     170                     175

His Asp Leu Pro Leu Asp Gly Phe Val Ser Glu Ala Gly Ile Leu Cys
          180                     185                     190
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Phe

<210> 651  
<211> 582  
<212> DNA  
<213> *Neisseria meningitidis*

<400> 651  
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gggcgggacg tgcgggcggc ggcaacggta aaaatcaacc acctgctcaa acgttatatt 120  
aaaaaagggc ggaaaatcgg cgtgtattgg ccgatgggca aggaattgcg tttggacggc 180  
tttgtccgcg cggcgcaaaa acgcggtgcg gaactctacc tgccttatat cgaaccgcgt 240  
tcgcggcgga tgtggtttac gccgtatcct gccgatggag taaaacaaga acgcaagcgc 300  
ggtagggcga agctgcatgt ccctcagttt gcaggtcgga aaaagcgtgt gcatgatttg 360  
aacctcctgc ttgtgccagt ggtcggtagt gacaggctgg gctaccgctt gggacaggca 420  
ggcggctatt acgatgcgac gctttcagcg atgaaatacc gtttgcaggc aaaaaccgtg 480  
ggcgtgggct ttgcctgcca gttggtggac aggctgccg tgcaggcgca cgaccggtct 540  
ttggacggtt ttgtgtcgga ggcggggata ttgtgtttt ag 582

<210> 652  
<211> 193  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 652  
Met Arg Asn Glu Glu Lys Arg Ala Leu Arg Arg Glu Leu Arg Gly Arg  
1 5 10 15  
Arg Ser Gln Met Gly Arg Asp Val Arg Ala Ala Ala Thr Val Lys Ile  
20 25 30  
Asn His Leu Leu Lys Arg Tyr Ile Lys Lys Gly Arg Lys Ile Gly Val  
35 40 45  
Tyr Trp Pro Met Gly Lys Glu Leu Arg Leu Asp Gly Phe Val Arg Ala  
50 55 60  
Ala Gln Lys Arg Gly Ala Glu Leu Tyr Leu Pro Tyr Ile Glu Pro Arg  
65 70 75 80  
Ser Arg Arg Met Trp Phe Thr Pro Tyr Pro Ala Asp Gly Val Lys Gln  
85 90 95  
Glu Arg Lys Arg Gly Arg Ala Lys Leu His Val Pro Gln Phe Ala Gly  
100 105 110  
Arg Lys Lys Arg Val His Asp Leu Asn Leu Leu Leu Val Pro Val Val  
115 120 125  
Gly Met Asp Arg Leu Gly Tyr Arg Leu Gly Gln Ala Gly Gly Tyr Tyr  
130 135 140  
Asp Ala Thr Leu Ser Ala Met Lys Tyr Arg Leu Gln Ala Lys Thr Val

145		150		155		160
Gly Val Gly Phe Ala Cys Gln Leu Val Asp Arg Leu Pro Val Glu Ala						
	165		170		175	
His Asp Arg Ser Leu Asp Gly Phe Val Ser Glu Ala Gly Ile Leu Cys						
	180		185		190	

Phe

<210> 653  
 <211> 582  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 653  
 atgaggaacg aggaaaaaaca cgccttgccg cgagagttgc gccgcgcccg cgcgcagatg 60  
 gggcatcaag ggcggttggc ggcggggcaa acgattaacc gcctgctcaa acgttatatc 120  
 aagcgtgggc ggaaaatcgg cgtgtattgg ccgatgggca aggaattgcg tttggacggc 180  
 tttgtccgcg cggcgcaaaa acgcggtgca aaactttatc tgccttatat cgaaccgcgt 240  
 tcgcggcgga tgtggtttac gccgtatcct gaaagcggaa tggaacggga gcgcatacgg 300  
 ggcagggcga agttgaacgt gccgcagttt gcagggcgca aaatccgcgt gcacgggtttg 360  
 tcggtattgc tcgtcccgcg tgcggcata gaccgcgagg gctaccgctt aggacaggca 420  
 ggcggctatt acgatgcgac gcttgccggc atgaaatacc gtttgcaggc aaaaaccgtg 480  
 ggcgtgggct ttgcctgccg gtttgtggac aggctgccgc gcgaaccgca cgatctgctg 540  
 ctggacgggt ttgtgtcgga ggcggggata ttgtgctttt ag 582

<210> 654  
 <211> 193  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 654  
 Met Arg Asn Glu Glu Lys His Ala Leu Arg Arg Glu Leu Arg Arg Ala  
 1 5 10 15  
 Arg Ala Gln Met Gly His Gln Gly Arg Leu Ala Ala Gly Gln Thr Ile  
 20 25 30  
 Asn Arg Leu Leu Lys Arg Tyr Ile Lys Arg Gly Arg Lys Ile Gly Val  
 35 40 45  
 Tyr Trp Pro Met Gly Lys Glu Leu Arg Leu Asp Gly Phe Val Arg Ala  
 50 55 60  
 Ala Gln Lys Arg Gly Ala Lys Leu Tyr Leu Pro Tyr Ile Glu Pro Arg  
 65 70 75 80  
 Ser Arg Arg Met Trp Phe Thr Pro Tyr Pro Glu Ser Gly Met Glu Arg  
 85 90 95  
 Glu Arg Ile Arg Gly Arg Ala Lys Leu Asn Val Pro Gln Phe Ala Gly  
 100 105 110

Arg Lys Ile Arg Val His Gly Leu Ser Val Leu Leu Val Pro Leu Val  
115 120 125

Gly Ile Asp Arg Glu Gly Tyr Arg Leu Gly Gln Ala Gly Gly Tyr Tyr  
130 135 140

Asp Ala Thr Leu Ala Ala Met Lys Tyr Arg Leu Gln Ala Lys Thr Val  
145 150 155 160

Gly Val Gly Phe Ala Cys Gln Phe Val Asp Arg Leu Pro Arg Glu Pro  
165 170 175

His Asp Leu Leu Leu Asp Gly Phe Val Ser Glu Ala Gly Ile Leu Cys  
180 185 190

Phe

<210> 655

<211> 912

<212> DNA

<213> Neisseria gonorrhoeae

<400> 655

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atgaaaacca attcagaaga actgaccgta tttgttcaag tggaggaaag cggcagcttc 60
agccgtgagg cggagcagtt ggagatggca aattctgccg taagccgcat cgtcaaaccg 120
ctggaggaaa agttgggagc gaacctgctc aaccgcacca cgcggcaact caatctgacg 180
gaagaaggcg cgcaatatatt ccgccgcgcg cagagaatcc tgcaagaaat ggcagcggcg 240
gaaaccgaaa tgctggcagt gcacgaagta ccgcaaggcg tgttgcgcgt ggattccgcg 300
atgccgatgg tgctgcatct gctggcgcgc ctggcagcaa aattcaacga acgctatccg 360
catatccgac tttcgctcgt ttcttccgaa ggctatatca atctgattga acgcaaagtc 420
gatattgcct tacgggccgg agaattggac gattccgggc tgcgtgcacg ccatctgttt 480
gacagccact tccgcgtagt cgccagtcct gaatatcttag caaaacacgg cacgccacaa 540
tctgcagaag atcttgccaa ccatcaatgt ttaggcttca cagaaccggg ttctctaaat 600
acatggggcg ttttagatgc gcagggaaat ccctataaaa ttccaccgca ctttaccgcc 660
agcagcggtg aaatcttacg ctcgttgtgc ctttcaagtt gcggtattgc ttgcttatca 720
gattttttgg ttgacaacga catcactgaa ggaaagttaa ttcccctatt cgcggaacaa 780
acctccaata aaacacaccc ctttaatgct gttattaca gcgataaagc cgtcaacctc 840
cgcttacgcg tatttttgga ttttttagtg aagggaactgg gaaaaaatat gaatagaacg 900
aataccaaat aa 912
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<210> 656

<211> 303

<212> PRT

<213> Neisseria gonorrhoeae

<400> 656

Met Lys Thr Asn Ser Glu Glu Leu Thr Val Phe Val Gln Val Val Glu  
1 5 10 15

Ser Gly Ser Phe Ser Arg Ala Ala Glu Gln Leu Glu Met Ala Asn Ser  
20 25 30

Ala Val Ser Arg Ile Val Lys Arg Leu Glu Glu Lys Leu Gly Val Asn  
35 40 45

Leu Leu Asn Arg Thr Thr Arg Gln Leu Asn Leu Thr Glu Glu Gly Ala  
 50 55 60  
 Gln Tyr Phe Arg Arg Ala Gln Arg Ile Leu Gln Glu Met Ala Ala Ala  
 65 70 75 80  
 Glu Thr Glu Met Leu Ala Val His Glu Val Pro Gln Gly Val Leu Arg  
 85 90 95  
 Val Asp Ser Ala Met Pro Met Val Leu His Leu Leu Ala Pro Leu Ala  
 100 105 110  
 Ala Lys Phe Asn Glu Arg Tyr Pro His Ile Arg Leu Ser Leu Val Ser  
 115 120 125  
 Ser Glu Gly Tyr Ile Asn Leu Ile Glu Arg Lys Val Asp Ile Ala Leu  
 130 135 140  
 Arg Ala Gly Glu Leu Asp Asp Ser Gly Leu Arg Ala Arg His Leu Phe  
 145 150 155 160  
 Asp Ser His Phe Arg Val Val Ala Ser Pro Glu Tyr Leu Ala Lys His  
 165 170 175  
 Gly Thr Pro Gln Ser Ala Glu Asp Leu Ala Asn His Gln Cys Leu Gly  
 180 185 190  
 Phe Thr Glu Pro Gly Ser Leu Asn Thr Trp Ala Val Leu Asp Ala Gln  
 195 200 205  
 Gly Asn Pro Tyr Lys Ile Ser Pro His Phe Thr Ala Ser Ser Gly Glu  
 210 215 220  
 Ile Leu Arg Ser Leu Cys Leu Ser Ser Cys Gly Ile Ala Cys Leu Ser  
 225 230 235 240  
 Asp Phe Leu Val Asp Asn Asp Ile Thr Glu Gly Lys Leu Ile Pro Leu  
 245 250 255  
 Phe Ala Glu Gln Thr Ser Asn Lys Thr His Pro Phe Asn Ala Val Tyr  
 260 265 270  
 Tyr Ser Asp Lys Ala Val Asn Leu Arg Leu Arg Val Phe Leu Asp Phe  
 275 280 285  
 Leu Val Lys Glu Leu Gly Lys Asn Met Asn Arg Thr Asn Thr Lys  
 290 295 300

<210> 657

<211> 900

<212> DNA

<213> *Neisseria meningitidis*

<400> 657

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ctggaggaaa agttgggtgt gaacctgctc aaccgcacca cgcggcaact cagtctgacg 180
gaagaaggcg cgcaatatTT ccgccgcgcg cagagaatcc tgcaagaaat ggcagcggcg 240
gaaaccgaaa tgctggcagt gcacgaaata ccgcaaggcg tgttgagcgt ggattccgcg 300
atgccgatgg tgctgcatct gctggcgccg ctggcagcaa aattcaacga acgctatccg 360
catatccgac tttcgcctcg ttttccgaa ggctatatca atctgattga acgcaaagtc 420
gatattgcct tacggggccg agaattggac gattccgggc tgcgtgcacg ccatctgttt 480
gacagccgct tccgcgtaat cgccagtcct gaatacctgg caaaacacgg cacgccgcaa 540
tctacagaag agcttgcccg ccaccaatgt ttaggcttca ccgaacccgg ttctctaaat 600
acatgggctg ttttagatgc gcagggaaat ccctataaga tttcaccgca ctttaccgcc 660
agcagcgggtg aaatcttacg ctcgttgtgc ctttcagggt gcggtattgt ttgcttatca 720
gatttttttg ttgacaacga catcgctgaa ggaaagttaa ttcccctgct cgccgaacaa 780
acctccgata aaacacaccc ctttaatgct gtttattaca gcgataaagc cgtcaatctc 840
cgcttacgcg tatttttgga ttttttagtg gaggaactgg gaaacaatct ctgtggataa 900

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<210> 658  
 <211> 299  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 658

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Ser	Gly	Ser	Phe	Ser	Arg	Ala	Ala	Glu	Gln	Leu	Ala	Met	Ala	Asn	Ser
			20					25					30		
Ala	Val	Ser	Arg	Ile	Val	Lys	Arg	Leu	Glu	Glu	Lys	Leu	Gly	Val	Asn
		35					40					45			
Leu	Leu	Asn	Arg	Thr	Thr	Arg	Gln	Leu	Ser	Leu	Thr	Glu	Glu	Gly	Ala
	50					55					60				
Gln	Tyr	Phe	Arg	Arg	Ala	Gln	Arg	Ile	Leu	Gln	Glu	Met	Ala	Ala	Ala
65					70					75					80
Glu	Thr	Glu	Met	Leu	Ala	Val	His	Glu	Ile	Pro	Gln	Gly	Val	Leu	Ser
			85						90					95	
Val	Asp	Ser	Ala	Met	Pro	Met	Val	Leu	His	Leu	Leu	Ala	Pro	Leu	Ala
		100						105					110		
Ala	Lys	Phe	Asn	Glu	Arg	Tyr	Pro	His	Ile	Arg	Leu	Ser	Leu	Val	Ser
		115					120					125			
Ser	Glu	Gly	Tyr	Ile	Asn	Leu	Ile	Glu	Arg	Lys	Val	Asp	Ile	Ala	Leu
	130					135						140			
Arg	Ala	Gly	Glu	Leu	Asp	Asp	Ser	Gly	Leu	Arg	Ala	Arg	His	Leu	Phe
145					150					155					160
Asp	Ser	Arg	Phe	Arg	Val	Ile	Ala	Ser	Pro	Glu	Tyr	Leu	Ala	Lys	His
			165					170						175	
Gly	Thr	Pro	Gln	Ser	Thr	Glu	Glu	Leu	Ala	Gly	His	Gln	Cys	Leu	Gly



180 185 190  
 Phe Thr Glu Pro Gly Ser Leu Asn Thr Trp Ala Val Leu Asp Ala Gln  
 195 200 205  
 Gly Asn Pro Tyr Lys Ile Ser Pro His Phe Thr Ala Ser Ser Gly Glu  
 210 215 220  
 Ile Leu Arg Ser Leu Cys Leu Ser Gly Cys Gly Ile Val Cys Leu Ser  
 225 230 235 240  
 Asp Phe Leu Val Asp Asn Asp Ile Ala Glu Gly Lys Leu Ile Pro Leu  
 245 250 255  
 Leu Ala Glu Gln Thr Ser Asp Lys Thr His Pro Phe Asn Ala Val Tyr  
 260 265 270  
 Tyr Ser Asp Lys Ala Val Asn Leu Arg Leu Arg Val Phe Leu Asp Phe  
 275 280 285  
 Leu Val Glu Glu Leu Gly Asn Asn Leu Cys Gly  
 290 295

<210> 659  
 <211> 900  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 659  
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 ctggaggaaa agttgggtgt gaacctgctc aaccgcacca cgcggcaact cagtctgacg 180  
 gaagaaggcg cgcaatatatt ccgccgcgcg cagagaatcc tgcaagaaat ggcagcggcg 240  
 gaaaccgaaa tgctggcagt gcacgaaata ccgcaaggcg tgttgcgcgt ggattccgcg 300  
 atgccgatgg tgctgcatct gctggcgccg ctggcagcaa aattcaacga acgctatccg 360  
 catatccgac tttcgctcgt ttcttccgaa ggctatatca atctgattga acgcaaagtc 420  
 gatattgcct tacggggccg agaattggac gattccgggc tgcgtgcacg ccatctgttt 480  
 gacagccgct tccgcgtaat cgccagtcct gaatacctgg caaacacgg cacgccgcaa 540  
 tctacagaag agcttgccgg ccaccaatgt ttaggcttca ccgaaccgg ttctctaaat 600  
 acatgggagg ttttagatgc gcagggaaat ccctataaga tttcaccgca ctttaccgcc 660  
 agcagcggtg aaatcttacg ctcggtgtgc ctttcagggt gcggtattgc ttgcttatca 720  
 gatttttttg ttgacaacga catcgctgaa ggaaagttaa ttcccctgct cgccgaacaa 780  
 acctccaata aaacgcaccc ctttaatgct gtttattaca gcgataaagc cgtaaacctc 840  
 cgcttacgcg tatttttgga ttttttagtg gaggaactgg gaaacaatct ctgtggataa 900

<210> 660  
 <211> 299  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 660  
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 1 5 10 15  
 Ser Gly Ser Phe Ser Arg Ala Ala Glu Gln Leu Ala Met Ala Asn Ser

20					25					30					
Ala	Val	Ser	Arg	Ile	Val	Lys	Arg	Leu	Glu	Glu	Lys	Leu	Gly	Val	Asn
		35					40					45			
Leu	Leu	Asn	Arg	Thr	Thr	Arg	Gln	Leu	Ser	Leu	Thr	Glu	Glu	Gly	Ala
		50					55					60			
Gln	Tyr	Phe	Arg	Arg	Ala	Gln	Arg	Ile	Leu	Gln	Glu	Met	Ala	Ala	Ala
		65					70					75			80
Glu	Thr	Glu	Met	Leu	Ala	Val	His	Glu	Ile	Pro	Gln	Gly	Val	Leu	Arg
				85					90					95	
Val	Asp	Ser	Ala	Met	Pro	Met	Val	Leu	His	Leu	Leu	Ala	Pro	Leu	Ala
			100					105					110		
Ala	Lys	Phe	Asn	Glu	Arg	Tyr	Pro	His	Ile	Arg	Leu	Ser	Leu	Val	Ser
			115				120					125			
Ser	Glu	Gly	Tyr	Ile	Asn	Leu	Ile	Glu	Arg	Lys	Val	Asp	Ile	Ala	Leu
		130					135					140			
Arg	Ala	Gly	Glu	Leu	Asp	Asp	Ser	Gly	Leu	Arg	Ala	Arg	His	Leu	Phe
				145					150					155	160
Asp	Ser	Arg	Phe	Arg	Val	Ile	Ala	Ser	Pro	Glu	Tyr	Leu	Ala	Lys	His
				165					170					175	
Gly	Thr	Pro	Gln	Ser	Thr	Glu	Glu	Leu	Ala	Gly	His	Gln	Cys	Leu	Gly
			180					185					190		
Phe	Thr	Glu	Pro	Gly	Ser	Leu	Asn	Thr	Trp	Ala	Val	Leu	Asp	Ala	Gln
			195					200					205		
Gly	Asn	Pro	Tyr	Lys	Ile	Ser	Pro	His	Phe	Thr	Ala	Ser	Ser	Gly	Glu
		210					215					220			
Ile	Leu	Arg	Ser	Leu	Cys	Leu	Ser	Gly	Cys	Gly	Ile	Ala	Cys	Leu	Ser
				225					230				235		240
Asp	Phe	Leu	Val	Asp	Asn	Asp	Ile	Ala	Glu	Gly	Lys	Leu	Ile	Pro	Leu
				245					250					255	
Leu	Ala	Glu	Gln	Thr	Ser	Asn	Lys	Thr	His	Pro	Phe	Asn	Ala	Val	Tyr
			260					265					270		
Tyr	Ser	Asp	Lys	Ala	Val	Asn	Leu	Arg	Leu	Arg	Val	Phe	Leu	Asp	Phe
			275				280						285		
Leu	Val	Glu	Glu	Leu	Gly	Asn	Asn	Leu	Cys	Gly					
			290				295								

<210> 661  
 <211> 897  
 <212> DNA

<213> Neisseria gonorrhoeae

<400> 661

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acggcggggca gcggttatct ctgcatcgac ggcgaaactt ccccgctcc ggtcggcacg 180
ggcgatattg tatttttccc gcgcggcttg ggtcatgtgt tgagccacga cggaaaatac 240
ggagaaaagt tacaaccgga catacgacaa aacggcacat ttatgggtcaa acagtgcggc 300
aacgggctgg atatgagcct gttttgcgcc cgtttccgct acgacacca cgccgatttg 360
atgaacgggc tgccggaaac cgtttttctg aacattgccc atccaagttt gcagtatgtg 420
gtttcaatgc tgcaactgga aagcgaaaaa cctttgacgg ggacggtttc cgtggtcaac 480
gcattaccgt ccgtcctgct ggtgcttata ctgcgcgcct atctcgaaca ggataaggat 540
gtcgaactct cgggcgtatt gaaaggtttg caggacaaac gtttgggaca tttgatccaa 600
aaggtgatag acaaaccgga agacgaatgg aatattgaca aaatggttgc cgccgccaat 660
atgtcgcgcg cgcaactgat gcgcgcgttc aaaagccaag tcggactcag cccgcacgcc 720
tttgtgaacc atatccgcct gcaaaaaggc gcattgctgc tgaagaaaac cccggattcg 780
gttttgaggg tcgcgctgtc ggtgggcttt cagtcggaaa cgcatttcgg caaggcggtc 840
aaacggcaat atcacgtttc gccggggcaa taccggaaag aaggcgggca aaaataa 897
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<210> 662

<211> 298

<212> PRT

<213> Neisseria gonorrhoeae

<400> 662

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Met Asp Ile Leu Asp Lys Leu Val Asp Leu Ala Gln Leu Thr Gly Ser
  1              5              10              15

Ala Asp Val Gln Cys Leu Leu Gly Gly Gln Trp His Glu Thr Leu Gln
      20              25              30

Arg Glu Gly Leu Val His Ile Val Thr Ala Gly Ser Gly Tyr Leu Cys
      35              40              45

Ile Asp Gly Glu Thr Ser Pro Arg Pro Val Gly Thr Gly Asp Ile Val
      50              55              60

Phe Phe Pro Arg Gly Leu Gly His Val Leu Ser His Asp Gly Lys Tyr
      65              70              75              80

Gly Glu Ser Leu Gln Pro Asp Ile Arg Gln Asn Gly Thr Phe Met Val
      85              90              95

Lys Gln Cys Gly Asn Gly Leu Asp Met Ser Leu Phe Cys Ala Arg Phe
      100             105             110

Arg Tyr Asp Thr His Ala Asp Leu Met Asn Gly Leu Pro Glu Thr Val
      115             120             125

Phe Leu Asn Ile Ala His Pro Ser Leu Gln Tyr Val Val Ser Met Leu
      130             135             140

Gln Leu Glu Ser Glu Lys Pro Leu Thr Gly Thr Val Ser Val Val Asn
      145             150             155             160

Ala Leu Pro Ser Val Leu Leu Val Leu Ile Leu Arg Ala Tyr Leu Glu
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165	170	175
Gln Asp Lys Asp Val Glu Leu Ser Gly Val Leu Lys Gly Trp Gln Asp		
180	185	190
Lys Arg Leu Gly His Leu Ile Gln Lys Val Ile Asp Lys Pro Glu Asp		
195	200	205
Glu Trp Asn Ile Asp Lys Met Val Ala Ala Ala Asn Met Ser Arg Ala		
210	215	220
Gln Leu Met Arg Arg Phe Lys Ser Gln Val Gly Leu Ser Pro His Ala		
225	230	235
Phe Val Asn His Ile Arg Leu Gln Lys Gly Ala Leu Leu Leu Lys Lys		
245	250	255
Thr Pro Asp Ser Val Leu Glu Val Ala Leu Ser Val Gly Phe Gln Ser		
260	265	270
Glu Thr His Phe Gly Lys Ala Phe Lys Arg Gln Tyr His Val Ser Pro		
275	280	285
Gly Gln Tyr Arg Lys Glu Gly Gly Gln Lys		
290	295	

<210> 663  
 <211> 906  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 663  
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 cacattgtta catcgggcag cggctatctc tgcacgcagc gcgaaacttc cccgcgtccg 180  
 gtcagtacag gggatattgt atttttcccg cgcggcttgg gtcattgtgt gagccacgac 240  
 ggaaaatgcg gagaaagtgt acaaccggat atgcggcagc acggtgcgtt tacgggtcaag 300  
 cagtgccgca acggacagga tatgagcctg ttttgcgccc gtttccgcta cgacacccac 360  
 gccgatttga tgaacgggct gcctgaaacc gtttttctga acattgcccc tccgagttta 420  
 cagtatgtgg tttcaatgct gcaactggaa agcaaaaaac ctttgacggg gacggtttcc 480  
 atgggtcaacg cattgtcgtc cgtcctgctg gtgcttatcc tgcgcgccta tctcgaacag 540  
 gataaggatg tcgaactctc gggcgtattg aaagggttggc aggacaaacg tttgggacat 600  
 ttaatccaaa aggtgataga caaacgggaa gagcaatgga atgtcgacaa aatgggtggc 660  
 gctgccaaata tgtcgcgcgc gcaactgatg cgcggtttca aaagccgggt cggactcagc 720  
 ccgcacgcct ttgtgaacca tatccgcctg caaaaaggcg cgttgctgct gaaaaaaaac 780  
 ccggattcgg ttttgtcggc cgcactgtcg gtaggctttc agtcggaaac gcacttcggc 840  
 aaggcgttca aacggcaata tcacgtttcg ccgggtcaat accggaaaga aggcgggcaa 900  
 aaataa 906

<210> 664  
 <211> 301  
 <212> PRT  
 <213> Neisseria meningitidis  
 <400> 664

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Val	Asp	Val	Gln	Cys	Leu	Leu	Gly	Gly	Gln	Trp	Ser	Val	Arg	His	Glu		20	25	30	
Thr	Leu	Gln	Arg	Glu	Gly	Leu	Val	His	Ile	Val	Thr	Ser	Gly	Ser	Gly		35	40	45	
Tyr	Leu	Cys	Ile	Asp	Gly	Glu	Thr	Ser	Pro	Arg	Pro	Val	Ser	Thr	Gly		50	55	60	
Asp	Ile	Val	Phe	Phe	Pro	Arg	Gly	Leu	Gly	His	Val	Leu	Ser	His	Asp		65	70	75	80
Gly	Lys	Cys	Gly	Glu	Ser	Leu	Gln	Pro	Asp	Met	Arg	Gln	His	Gly	Ala		85	90	95	
Phe	Thr	Val	Lys	Gln	Cys	Gly	Asn	Gly	Gln	Asp	Met	Ser	Leu	Phe	Cys		100	105	110	
Ala	Arg	Phe	Arg	Tyr	Asp	Thr	His	Ala	Asp	Leu	Met	Asn	Gly	Leu	Pro		115	120	125	
Glu	Thr	Val	Phe	Leu	Asn	Ile	Ala	His	Pro	Ser	Leu	Gln	Tyr	Val	Val		130	135	140	
Ser	Met	Leu	Gln	Leu	Glu	Ser	Lys	Lys	Pro	Leu	Thr	Gly	Thr	Val	Ser		145	150	155	160
Met	Val	Asn	Ala	Leu	Ser	Ser	Val	Leu	Leu	Val	Leu	Ile	Leu	Arg	Ala		165	170	175	
Tyr	Leu	Glu	Gln	Asp	Lys	Asp	Val	Glu	Leu	Ser	Gly	Val	Leu	Lys	Gly		180	185	190	
Trp	Gln	Asp	Lys	Arg	Leu	Gly	His	Leu	Ile	Gln	Lys	Val	Ile	Asp	Lys		195	200	205	
Pro	Glu	Asp	Glu	Trp	Asn	Val	Asp	Lys	Met	Val	Ala	Ala	Ala	Asn	Met		210	215	220	
Ser	Arg	Ala	Gln	Leu	Met	Arg	Arg	Phe	Lys	Ser	Arg	Val	Gly	Leu	Ser		225	230	235	240
Pro	His	Ala	Phe	Val	Asn	His	Ile	Arg	Leu	Gln	Lys	Gly	Ala	Leu	Leu		245	250	255	
Leu	Lys	Lys	Asn	Pro	Asp	Ser	Val	Leu	Ser	Val	Ala	Leu	Ser	Val	Gly		260	265	270	
Phe	Gln	Ser	Glu	Thr	His	Phe	Gly	Lys	Ala	Phe	Lys	Arg	Gln	Tyr	His		275	280	285	
Val	Ser	Pro	Gly	Gln	Tyr	Arg	Lys	Glu	Gly	Gly	Gln	Lys					290	295	300	

<210> 665  
 <211> 906  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 665  
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 cacattgtta catcgggcag cggctatctc tgcacgcagc gcgaaacttc cccgcgtccg 180  
 gtcagtacag gggatattgt atttttcccg cgcggttgg gtcattgtgt gagccacgac 240  
 ggaaaatgcg gagaaagttt acaaccggat atgcggcagc acggtgcgtt tacgggtcaag 300  
 cagtgcggca acggacagga tatgagcctg ttttgcgccc gtttccgcta cgacacccac 360  
 gccgatttga tgaacgggct gcctgaaacc gtttttctga acattgccca tccgagttta 420  
 cagtatgtgg tttcaatgct gcaactggaa agcaaaaaac ctttgacggg gacggtttcc 480  
 atggtcaacg cattgtcgtc cgtcctgctg gtgcttatcc tgcgcgccta tctcgaacag 540  
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 ttaatccaaa aggtgataga caaacgggaa gacgaatgga atgtcgacaa aatggtggcg 660  
 gctgccaaata tgtcgcgcgc gcaactgatg cgccgtttca aaagccgggt cggactcagc 720  
 ccgcacgcct ttgtgaacca tatccgcctg caaaaaggcg cggttgctgct gaaaaaaaac 780  
 ccggattcgg ttttgcggt cgactgtcg gtaggctttc agtcggaaac gcacttcggc 840  
 aaggcgttca aacggcaata tcacgtttcg ccgggtcaat accggaaaga aggcgggcaa 900  
 aaataa 906

<210> 666  
 <211> 301  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 666  
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 20 25 30  
 Thr Leu Gln Arg Glu Gly Leu Val His Ile Val Thr Ser Gly Ser Gly  
 35 40 45  
 Tyr Leu Cys Ile Asp Gly Glu Thr Ser Pro Arg Pro Val Ser Thr Gly  
 50 55 60  
 Asp Ile Val Phe Phe Pro Arg Gly Leu Gly His Val Leu Ser His Asp  
 65 70 75 80  
 Gly Lys Cys Gly Glu Ser Leu Gln Pro Asp Met Arg Gln His Gly Ala  
 85 90 95  
 Phe Thr Val Lys Gln Cys Gly Asn Gly Gln Asp Met Ser Leu Phe Cys  
 100 105 110  
 Ala Arg Phe Arg Tyr Asp Thr His Ala Asp Leu Met Asn Gly Leu Pro  
 115 120 125  
 Glu Thr Val Phe Leu Asn Ile Ala His Pro Ser Leu Gln Tyr Val Val  
 130 135 140

Ser Met Leu Gln Leu Glu Ser Lys Lys Pro Leu Thr Gly Thr Val Ser  
 145 150 155 160

Met Val Asn Ala Leu Ser Ser Val Leu Leu Val Leu Ile Leu Arg Ala  
 165 170 175

Tyr Leu Glu Gln Asp Lys Asp Val Glu Leu Ser Gly Val Leu Lys Gly  
 180 185 190

Trp Gln Asp Lys Arg Leu Gly His Leu Ile Gln Lys Val Ile Asp Lys  
 195 200 205

Pro Glu Asp Glu Trp Asn Val Asp Lys Met Val Ala Ala Ala Asn Met  
 210 215 220

Ser Arg Ala Gln Leu Met Arg Arg Phe Lys Ser Arg Val Gly Leu Ser  
 225 230 235 240

Pro His Ala Phe Val Asn His Ile Arg Leu Gln Lys Gly Ala Leu Leu  
 245 250 255

Leu Lys Lys Asn Pro Asp Ser Val Leu Ser Val Ala Leu Ser Val Gly  
 260 265 270

Phe Gln Ser Glu Thr His Phe Gly Lys Ala Phe Lys Arg Gln Tyr His  
 275 280 285

Val Ser Pro Gly Gln Tyr Arg Lys Glu Gly Gly Gln Lys  
 290 295 300

<210> 667  
 <211> 903  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 667  
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 gaattggtct tttggcgcac gctgttttca accgttacgc tcggtgctgc cgccgtattg 180  
 cggcgcgaca ccttccgcac gccccattgg aaaaaccact taaaccgcag tatggtcggg 240  
 acggggggcga tgctgctgct gttttacgcg gtaacgcac tgcccttgac aaccggcggt 300  
 accctgagtt acacctcgtc gatttttttg gcggtatttt ccttcctgat tttgaaagaa 360  
 cggatttccg tttacacgca ggcggtgctg ctccctgggt ttgccggcgt ggtattgctg 420  
 cttaatccct cgttccgcag cggtcaggaa ccggcggcac tcgccgggct ggccggcggc 480  
 gcgatgtccg gctggggcgta tttgaaagtg cgcgaactgt ctttggcggg cgaaccgggc 540  
 tggcgcgtcg tgttttacct ttccgcaacc ggcgtggcga tgctgctcggg ttgggcgacg 600  
 ctgaccggct ggcacaccct gtcctttcca tcggcagttt atctgtcggg catcggcggtg 660  
 tccgcgtgta ttgcccact gtcgatgacg cgcgcctaca aagtcggcga caaattcacg 720  
 gttgcctcgc tttcctatat gaccgtcgtc ttttccgccc tgtctgccgc attttttctg 780  
 ggcgaagagc ttttctggca ggaaatactc ggatgtgca tcattatcct cagcggcatt 840  
 ttgagcagca tccgccccat tgccttcaaa cagcggctgc aagccctctt ccgccaaaga 900  
 taa 903

<210> 668

<211> 300

<212> PRT

<213> Neisseria gonorrhoeae

<400> 668

Met Asp Thr Ala Lys Lys Asp Ile Leu Gly Ser Gly Trp Met Leu Val  
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Ala Ala Ala Cys Phe Thr Val Met Asn Val Leu Ile Lys Glu Ala Ser  
20 25 30

Ala Lys Phe Ala Leu Gly Ser Gly Glu Leu Val Phe Trp Arg Met Leu  
35 40 45

Phe Ser Thr Val Thr Leu Gly Ala Ala Ala Val Leu Arg Arg Asp Thr  
50 55 60

Phe Arg Thr Pro His Trp Lys Asn His Leu Asn Arg Ser Met Val Gly  
65 70 75 80

Thr Gly Ala Met Leu Leu Leu Phe Tyr Ala Val Thr His Leu Pro Leu  
85 90 95

Thr Thr Gly Val Thr Leu Ser Tyr Thr Ser Ser Ile Phe Leu Ala Val  
100 105 110

Phe Ser Phe Leu Ile Leu Lys Glu Arg Ile Ser Val Tyr Thr Gln Ala  
115 120 125

Val Leu Leu Leu Gly Phe Ala Gly Val Val Leu Leu Leu Asn Pro Ser  
130 135 140

Phe Arg Ser Gly Gln Glu Pro Ala Ala Leu Ala Gly Leu Ala Gly Gly  
145 150 155 160

Ala Met Ser Gly Trp Ala Tyr Leu Lys Val Arg Glu Leu Ser Leu Ala  
165 170 175

Gly Glu Pro Gly Trp Arg Val Val Phe Tyr Leu Ser Ala Thr Gly Val  
180 185 190

Ala Met Ser Ser Val Trp Ala Thr Leu Thr Gly Trp His Thr Leu Ser  
195 200 205

Phe Pro Ser Ala Val Tyr Leu Ser Gly Ile Gly Val Ser Ala Leu Ile  
210 215 220

Ala Gln Leu Ser Met Thr Arg Ala Tyr Lys Val Gly Asp Lys Phe Thr  
225 230 235 240

Val Ala Ser Leu Ser Tyr Met Thr Val Val Phe Ser Ala Leu Ser Ala  
245 250 255

Ala Phe Phe Leu Gly Glu Glu Leu Phe Trp Gln Glu Ile Leu Gly Met  
260 265 270

Cys Ile Ile Ile Leu Ser Gly Ile Leu Ser Ser Ile Arg Pro Ile Ala



275

280

285

Phe Lys Gln Arg Leu Gln Ala Leu Phe Arg Gln Arg  
 290 295 300

<210> 669  
 <211> 903  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 669  
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 gaattggtct ttggcgcat gctgttttca accgttgcg cggggctgc cgcgtattg 180  
 cgtcgggaca mcttccgcac gccccattgg aaaaaccact taaaccgcag tatggtcggg 240  
 acggggggcga tgctgctgct gttttacgcg gtaacgcata tgcctttggc cactggcggt 300  
 accctgagtt acacctcgtc gatttttttg gcggtatttt ccttcctgat ttgaaagaa 360  
 cggatttccg ttacacgcga ggcggtgctg ctcttgggtt ttgccggcgt ggtattgctg 420  
 cttaatccct cgttccgcag cggtcaggaa acggcggcac tcgccgggct ggcgggcggc 480  
 gcgatgtccg gctgggcgta ttgaaagtgc cgcgaactgt ctttggcggg cgaaccgcgc 540  
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 gttgcctcgc tttcctatat gaccgtcgtt tttccgcgtc tgtctgccgc attttttctg 780  
 ggcgaagagc ttttctggca ggaaatactc ggtatgtgca tcatcatcct cagcggatt 840  
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 taa 903

<210> 670  
 <211> 300  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 670  
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 Ala Lys Phe Ala Leu Gly Ser Gly Glu Leu Val Phe Trp Arg Met Leu  
 35 40 45  
 Phe Ser Thr Val Ala Leu Gly Ala Ala Ala Val Leu Arg Arg Asp Xaa  
 50 55 60  
 Phe Arg Thr Pro His Trp Lys Asn His Leu Asn Arg Ser Met Val Gly  
 65 70 75 80  
 Thr Gly Ala Met Leu Leu Leu Phe Tyr Ala Val Thr His Leu Pro Leu  
 85 90 95  
 Ala Thr Gly Val Thr Leu Ser Tyr Thr Ser Ser Ile Phe Leu Ala Val  
 100 105 110

Phe	Ser	Phe	Leu	Ile	Leu	Lys	Glu	Arg	Ile	Ser	Val	Tyr	Thr	Gln	Ala
		115					120					125			
Val	Leu	Leu	Leu	Gly	Phe	Ala	Gly	Val	Val	Leu	Leu	Leu	Asn	Pro	Ser
	130					135					140				
Phe	Arg	Ser	Gly	Gln	Glu	Thr	Ala	Ala	Leu	Ala	Gly	Leu	Ala	Gly	Gly
145					150					155					160
Ala	Met	Ser	Gly	Trp	Ala	Tyr	Leu	Lys	Val	Arg	Glu	Leu	Ser	Leu	Ala
				165					170					175	
Gly	Glu	Pro	Gly	Trp	Arg	Val	Val	Phe	Tyr	Leu	Ser	Val	Thr	Gly	Val
			180					185					190		
Ala	Met	Ser	Ser	Val	Trp	Ala	Thr	Leu	Thr	Gly	Trp	His	Thr	Leu	Ser
		195					200					205			
Phe	Pro	Ser	Ala	Val	Tyr	Leu	Ser	Cys	Ile	Gly	Val	Ser	Ala	Leu	Ile
	210					215					220				
Ala	Gln	Leu	Ser	Met	Thr	Arg	Ala	Tyr	Lys	Val	Gly	Asp	Lys	Phe	Thr
225					230					235					240
Val	Ala	Ser	Leu	Ser	Tyr	Met	Thr	Val	Val	Phe	Ser	Ala	Leu	Ser	Ala
				245					250					255	
Ala	Phe	Phe	Leu	Gly	Glu	Glu	Leu	Phe	Trp	Gln	Glu	Ile	Leu	Gly	Met
			260					265					270		
Cys	Ile	Ile	Ile	Leu	Ser	Gly	Ile	Leu	Ser	Ser	Ile	Arg	Pro	Thr	Ala
	275						280					285			
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<210> 671  
 <211> 903  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 671  
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 acggggggcga tgctgctgct gttttacgcg gtaacgcac tcctttggc caccggcggt 300  
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 cttaatccct cgttccgcag cggtcaggaa acggcggcac tcgccgggct ggcgggcggc 480  
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 ctgaccggct ggcacaccct gtcctttcca tcggcagttt atctgtcgtg catcggcggtg 660  
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 gccgaagagc ttttctggca ggaaatactc ggtatgtgca tcatcatcct cagcgggtatt 840

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 taa 903

<210> 672  
 <211> 300  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 672  
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 Ala Lys Phe Ala Leu Gly Ser Gly Glu Leu Val Phe Trp Arg Met Leu  
 35 40 45  
 Phe Ser Thr Val Ala Leu Gly Ala Ala Ala Val Leu Arg Arg Asp Thr  
 50 55 60  
 Phe Arg Thr Pro His Trp Lys Asn His Leu Asn Arg Ser Met Val Gly  
 65 70 75 80  
 Thr Gly Ala Met Leu Leu Leu Phe Tyr Ala Val Thr His Leu Pro Leu  
 85 90 95  
 Ala Thr Gly Val Thr Leu Ser Tyr Thr Ser Ser Ile Phe Leu Ala Val  
 100 105 110  
 Phe Ser Phe Leu Ile Leu Lys Glu Arg Ile Ser Val Tyr Thr Gln Ala  
 115 120 125  
 Val Leu Leu Leu Gly Phe Ala Gly Val Val Leu Leu Leu Asn Pro Ser  
 130 135 140  
 Phe Arg Ser Gly Gln Glu Thr Ala Ala Leu Ala Gly Leu Ala Gly Gly  
 145 150 155 160  
 Ala Met Ser Gly Trp Ala Tyr Leu Lys Val Arg Glu Leu Ser Leu Ala  
 165 170 175  
 Gly Glu Pro Gly Trp Arg Val Val Phe Tyr Leu Ser Val Thr Gly Val  
 180 185 190  
 Ala Met Ser Ser Val Trp Ala Thr Leu Thr Gly Trp His Thr Leu Ser  
 195 200 205  
 Phe Pro Ser Ala Val Tyr Leu Ser Cys Ile Gly Val Ser Ala Leu Ile  
 210 215 220  
 Ala Gln Leu Ser Met Thr Arg Ala Tyr Lys Val Gly Asp Lys Phe Thr  
 225 230 235 240  
 Val Ala Ser Leu Ser Tyr Met Thr Val Val Phe Ser Ala Leu Ser Ala  
 245 250 255

Ala Phe Phe Leu Ala Glu Glu Leu Phe Trp Gln Glu Ile Leu Gly Met  
 260 265 270

Cys Ile Ile Ile Leu Ser Gly Ile Leu Ser Ser Ile Arg Pro Thr Ala  
 275 280 285

Phe Lys Gln Arg Leu Gln Ser Leu Phe Arg Gln Arg  
 290 295 300

<210> 673  
 <211> 1983  
 <212> DNA  
 <213> Neisseria gonorrhoeae

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 tggttttatg ttttaacgtt ttccattttt ctgggttttc tgctgatact ctcggtcagc 180  
 ggtttgggaa acatcaggct aggacgggat gaagatgtgc cggaattcgg cttcctgtcg 240  
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 caggcattgc tgcacacggg gtccatttgg ggcgttcacg cctgggtcgg gtacggtacg 420  
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 tgtttttacc ccctgttgaa agaaaaaatt tccggaagg tccggcgatgc cattgatatt 540  
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 ctgggcgcgg gattgcagga aatgggctgg attgccgaaa acagcttcgg cgtgcaggtc 660  
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 ttttggacgg gcggcaagt gaaagaacgg ctggtgcgga taatgagcca gacgcaggag 1560  
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 cagtatatga acaaggacga gctgattgcc gacattttga aaaactacga acgttatattg 1920  
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 taa 1983

<210> 674  
 <211> 660  
 <212> PRT  
 <213> Neisseria gonorrhoeae

<400> 674

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			20					25					30			
Glu	Val	Ile	Phe	Thr	Glu	Phe	Ser	Trp	Phe	Tyr	Val	Leu	Thr	Phe	Ser	
		35					40					45				
Ile	Phe	Leu	Gly	Phe	Leu	Leu	Ile	Leu	Ser	Val	Ser	Gly	Leu	Gly	Asn	
	50					55					60					
Ile	Arg	Leu	Gly	Arg	Asp	Glu	Asp	Val	Pro	Glu	Phe	Gly	Phe	Leu	Ser	
65					70					75					80	
Trp	Leu	Ala	Met	Leu	Phe	Ala	Ala	Gly	Met	Gly	Val	Gly	Leu	Met	Phe	
				85					90					95		
Phe	Gly	Val	Ala	Glu	Pro	Leu	Met	His	Tyr	Phe	Ser	Asp	Ile	Thr	Val	
			100					105					110			
Gly	Ala	Pro	Glu	His	Arg	Gln	Gln	Gln	Ala	Leu	Leu	His	Thr	Val	Phe	
		115					120					125				
His	Trp	Gly	Val	His	Ala	Trp	Ser	Val	Tyr	Gly	Thr	Ile	Ala	Leu	Ala	
	130					135					140					
Leu	Ala	Tyr	Phe	Gly	Phe	Arg	Tyr	Lys	Leu	Pro	Leu	Ala	Leu	Arg	Ser	
145					150					155					160	
Cys	Phe	Tyr	Pro	Leu	Leu	Lys	Glu	Lys	Ile	Ser	Gly	Arg	Phe	Gly	Asp	
				165					170					175		
Ala	Ile	Asp	Ile	Met	Ala	Leu	Leu	Ala	Thr	Phe	Phe	Gly	Ile	Ile	Thr	
			180					185					190			
Thr	Leu	Gly	Phe	Gly	Ala	Ser	Gln	Leu	Gly	Ala	Gly	Leu	Gln	Glu	Met	
		195					200					205				
Gly	Trp	Ile	Ala	Glu	Asn	Ser	Phe	Gly	Val	Gln	Val	Leu	Ile	Ile	Ala	
	210					215					220					
Ala	Val	Met	Ser	Leu	Ala	Val	Val	Ser	Ala	Ile	Ser	Gly	Val	Gly	Lys	
225					230					235					240	
Gly	Val	Lys	Val	Leu	Ser	Glu	Leu	Asn	Leu	Gly	Leu	Ala	Phe	Leu	Leu	
				245					250					255		
Leu	Phe	Phe	Val	Leu	Ala	Ala	Asp	Pro	Thr	Val	Tyr	Leu	Leu	Ser	Ala	
			260					265					270			
Phe	Gly	Asp	Asn	Ile	Gly	Asn	Tyr	Leu	Gly	Asn	Leu	Val	Arg	Leu	Ser	
		275					280					285				
Leu	Lys	Thr	Tyr	Ala	Tyr	Glu	Arg	Glu	His	Lys	Pro	Trp	Phe	Glu	Ser	

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Trp	Thr	Val	Leu	Tyr	Trp	Ala	Trp	Trp	Cys	Ser	Trp	Ala	Pro	Phe	Val
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Gly	Leu	Phe	Ile	Ala	Arg	Ile	Ser	Lys	Gly	Arg	Thr	Ile	Arg	Glu	Phe
				325					330					335	
Val	Phe	Gly	Val	Leu	Leu	Ile	Pro	Gly	Leu	Phe	Gly	Val	Leu	Trp	Phe
			340					345					350		
Thr	Val	Phe	Gly	Asn	Thr	Ala	Ile	Trp	Leu	Asn	Asp	Gly	Val	Ala	Gly
			355				360					365			
Gly	Met	Leu	Glu	Lys	Met	Thr	Ser	Ser	Pro	Glu	Thr	Leu	Leu	Phe	Lys
	370					375					380				
Phe	Phe	Asn	Tyr	Leu	Pro	Leu	Pro	Glu	Leu	Thr	Ser	Ile	Val	Ser	Leu
385					390					395					400
Leu	Val	Ile	Ser	Leu	Phe	Phe	Val	Thr	Ser	Ala	Asp	Ser	Gly	Ile	Tyr
				405				410						415	
Val	Leu	Asn	Asn	Ile	Thr	Ser	Arg	Asp	Lys	Gly	Leu	Ser	Ala	Pro	Arg
			420					425					430		
Trp	Gln	Ala	Val	Met	Trp	Gly	Val	Leu	Met	Ser	Ala	Val	Ala	Val	Leu
			435				440					445			
Leu	Met	Arg	Ser	Gly	Gly	Leu	Gly	Asn	Leu	Gln	Ser	Met	Thr	Leu	Ile
	450					455					460				
Val	Ser	Leu	Pro	Phe	Ala	Leu	Leu	Met	Leu	Ile	Met	Cys	Phe	Ser	Leu
465					470					475					480
Trp	Lys	Gly	Leu	Ser	Ala	Asp	Lys	Lys	Tyr	Phe	Glu	Thr	Arg	Val	Asn
				485					490					495	
Pro	Thr	Ser	Val	Phe	Trp	Thr	Gly	Gly	Lys	Trp	Lys	Glu	Arg	Leu	Val
			500					505					510		
Arg	Ile	Met	Ser	Gln	Thr	Gln	Glu	Gln	Asp	Ile	Leu	Lys	Phe	Leu	Lys
		515					520					525			
His	Thr	Ala	Ser	Pro	Ala	Met	His	Glu	Leu	Gln	Arg	Glu	Leu	Ser	Glu
	530					535					540				
Glu	Tyr	Gly	Leu	Ser	Val	Arg	Val	Asp	Lys	Met	Phe	His	Gln	Asp	Glu
545					550					555					560
Pro	Ala	Ile	Glu	Phe	Val	Ile	Arg	Lys	Glu	Thr	Met	Arg	Asp	Phe	Met
				565					570					575	
Tyr	Gly	Ile	Lys	Ser	Val	Gly	Gln	Asp	Val	Ser	Asp	Gln	Leu	Ile	Asn
			580					585					590		
Asp	Gly	Lys	Leu	Pro	His	Ile	Arg	His	Gln	Thr	Thr	Tyr	Lys	Pro	Tyr

595

600

605

Ala Tyr Phe Phe Asp Gly Arg Val Gly Tyr Asp Val Gln Tyr Met Asn  
610 615 620

Lys Asp Glu Leu Ile Ala Asp Ile Leu Lys Asn Tyr Glu Arg Tyr Leu  
625 630 635 640

Met Leu Leu Asp Asp Val Gly Gln Glu Leu Met Ala His Glu Gln Val  
645 650 655

Glu Leu Ala Glu  
660

&lt;210&gt; 675

&lt;211&gt; 1983

&lt;212&gt; DNA

<213> *Neisseria meningitidis*

&lt;400&gt; 675

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tggttttatg ttttaacggt ttccattttt ctgggtttcc tgctgatact ctcgggtcagc 180  
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cagtatatga acaaggacga gctgattgcc gacattttga aaaactacga acgttatattg 1920  
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taa 1983

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<211> 660  
<212> PRT  
<213> Neisseria meningitidis

<400> 676  
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Glu Val Ile Phe Thr Glu Phe Ser Trp Phe Tyr Val Leu Thr Phe Ser  
35 40 45  
Ile Phe Leu Gly Phe Leu Leu Ile Leu Ser Val Ser Ser Leu Gly Asn  
50 55 60  
Ile Arg Leu Gly Arg Asp Glu Asp Val Pro Glu Phe Gly Phe Leu Ser  
65 70 75 80  
Trp Leu Ala Met Leu Phe Ala Ala Gly Met Gly Val Gly Leu Met Phe  
85 90 95  
Phe Gly Val Ala Glu Pro Leu Met His Tyr Phe Ser Asp Ile Thr Ala  
100 105 110  
Gly Thr Pro Glu His Arg Gln Gln Gln Ala Leu Leu His Thr Val Phe  
115 120 125  
His Trp Gly Val His Ala Trp Ser Val Tyr Gly Thr Ile Ala Leu Ala  
130 135 140  
Leu Ala Tyr Phe Gly Phe Arg Tyr Lys Leu Pro Leu Ala Leu Arg Ser  
145 150 155 160  
Cys Phe Tyr Pro Leu Leu Lys Glu Lys Ile Ser Gly Arg Phe Gly Asp  
165 170 175  
Ala Ile Asp Ile Met Ala Leu Leu Ala Thr Phe Phe Gly Ile Ile Thr  
180 185 190  
Thr Leu Gly Phe Gly Ala Ser Gln Leu Gly Ala Gly Leu Gln Glu Met  
195 200 205  
Gly Trp Ile Ala Glu Asn Ser Phe Ser Val Gln Val Leu Ile Ile Ala  
210 215 220  
Ala Val Met Ser Leu Ala Val Val Ser Ala Ile Ser Gly Val Gly Lys  
225 230 235 240  
Gly Val Lys Val Leu Ser Glu Leu Asn Leu Gly Leu Ala Phe Leu Leu  
245 250 255  
Leu Phe Phe Val Leu Ala Ala Gly Pro Thr Val Tyr Leu Leu Ser Ala  
260 265 270



Phe Gly Asp Asn Ile Gly Asn Tyr Leu Gly Asn Leu Val Arg Leu Ser  
275 280 285

Phe Lys Thr Tyr Ala Tyr Glu Arg Glu His Lys Pro Trp Phe Glu Ser  
290 295 300

Trp Thr Val Leu Tyr Trp Ala Trp Trp Cys Ser Trp Ala Pro Phe Val  
305 310 315 320

Gly Leu Phe Ile Ala Arg Ile Ser Lys Gly Arg Thr Ile Arg Glu Phe  
325 330 335

Val Phe Gly Val Leu Leu Ile Pro Gly Leu Phe Gly Val Leu Trp Phe  
340 345 350

Thr Val Phe Gly Asn Thr Ala Ile Trp Leu Asn Asp Gly Val Ala Gly  
355 360 365

Gly Met Leu Glu Lys Met Thr Ser Ser Pro Glu Thr Leu Leu Phe Lys  
370 375 380

Phe Phe Asn Tyr Leu Pro Leu Pro Glu Leu Thr Ser Ile Val Ser Leu  
385 390 395 400

Leu Val Ile Ser Leu Phe Phe Val Thr Ser Ala Asp Ser Gly Ile Tyr  
405 410 415

Val Leu Asn Asn Ile Thr Ser Arg Asp Lys Gly Leu Ser Ala Pro Arg  
420 425 430

Trp Gln Ala Val Met Trp Gly Val Leu Met Ser Ala Val Ala Val Leu  
435 440 445

Leu Met Arg Ser Gly Gly Leu Gly Asn Leu Gln Ser Met Thr Leu Ile  
450 455 460

Val Ser Leu Pro Phe Ala Leu Leu Met Leu Ile Met Cys Phe Ser Leu  
465 470 475 480

Trp Lys Gly Leu Ser Ala Asp Lys Lys Tyr Phe Glu Thr Arg Val Asn  
485 490 495

Pro Thr Ser Val Phe Trp Thr Gly Gly Lys Trp Lys Glu Arg Leu Val  
500 505 510

Gln Ile Met Ser Gln Thr Gln Glu Gln Asp Ile Leu Lys Phe Leu Lys  
515 520 525

Gln Thr Ala Ser Pro Ala Met His Glu Leu Gln Arg Glu Leu Ser Glu  
530 535 540

Glu Tyr Gly Leu Ser Val Arg Val Asp Lys Met Phe His Arg Asp Glu  
545 550 555 560

Pro Ala Ile Glu Phe Val Ile Arg Lys Glu Thr Met Arg Asp Phe Met  
565 570 575

Tyr Gly Ile Lys Ser Val Gly Gln Asp Val Ser Asp Gln Leu Ile Asn  
                   580                                  585                                  590  
 Asp Gly Lys Leu Pro His Ile Arg His Gln Thr Thr Tyr Lys Pro Tyr  
                   595                                  600                                  605  
 Ala Tyr Phe Phe Asp Gly Arg Val Gly Tyr Asp Val Gln Tyr Met Asn  
                   610                                  615                                  620  
 Lys Asp Glu Leu Ile Ala Asp Ile Leu Lys Asn Tyr Glu Arg Tyr Leu  
                   625                                  630                                  635                                  640  
 Met Leu Leu Asp Asp Val Gly Gln Glu Leu Met Ala His Glu Gln Val  
                                   645                                  650                                  655  
 Glu Leu Ala Glu  
                   660

<210> 677  
 <211> 1983  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 677  
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 tggttttatg ttttaacggt ttccattttt ctgggtttcc tgctgatact ctccgtcagc 180  
 agtttgggaa acatcaggct cggacgggat gaagatgtgc cggaaattcgg ctccctgtcg 240  
 tggctggcga tgctgtttgc ggccgggatg ggcgtgggtc tgatgttttt cggcgtggca 300  
 gagccgttga tgcattattt ttccggacatt acggccggca cgccggaaca caggcagcag 360  
 caggcattgc tgcacacggt gttccatttg ggcgttcacg cttggtcggt gtacggtacg 420  
 attgcattgg ctttggctta ttccggtttc cgctacaagc tgccgcttgc cctgcgttct 480  
 tgtttttacc ccctgttgaa agaaaaaatt tccggaaggt tcggcgatgc cattgatatt 540  
 atggcgttgc ttgctacttt ttccggcatc atcaccacat tggggttcgg ggcttcgcaa 600  
 ctgggcgccg gattgcagga aataggctgg attgccgaaa acagcttcag cgtgcagggt 660  
 ttgattatcg ccgcggtcat gtccctcgcc gtcgtttcgg caatatccgg cgtggggaag 720  
 ggtgtgaagg tgttgagcga gttgaacctg ggtcttgctg ttttgctgct gttttttgtt 780  
 ttggcggcgg gtccactgt ttacctgttg tcggcattcg gcgacaacat agggaaactac 840  
 ctcgaaaatc tgggtgcgct cagttttaaa acttatgctg acgaacggga acacaagccg 900  
 tggtttgaat cttggacggt gctttatttg gcgtggtggt gttcttgggc gccgtttgtg 960  
 ggtttgttta tcgcgcgcat ttcaaagggg cgcaccatcc gcgagtttgt cttcggggtt 1020  
 ttgctcatcc ccggcctggt cggcgttttg tggtttaccg tcttcggcaa tacggcgatt 1080  
 tggctgaatg acgggggttg ggggggagtg ctcgaaaaga tgacctctc tccggaaacg 1140  
 ctgcttttta aattctttaa ttacctcccc ctgcccgaat tgacgagcat cgtcagcctg 1200  
 ctggctcattt ctctgttttt tgtaacttct gccgattccg ggatttatgt cctgaacaat 1260  
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 ttttgacagg gcggcaagt gaaagaacgg ctggtgcaga taatgagcca gacgcaggag 1560  
 caggatattt taaaattcct caaacatacc gcatcgcccg ctatgcacga gttacaacgg 1620  
 gagctttcgg aagaatacgg cttgagcgtc cgggtcgata agatgtttca tcaggacgag 1680  
 cccgcaatcg agttcgatc tcggaaagag acgatgcgcg attttatgta cgggattaag 1740  
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 catcagacaa cttacaaacc ctacgcttat tttttcgacg ggcgcgtcgg gtacgatgtg 1860  
 cagtatatga acaaggacga gctgattgcc gacattttga aaaactacga acgttatttg 1920

atgttggtgg atgatgtcgg tcaggaactg atggcgcacg agcaggtgga attggcagag 1980  
 taa 1983

<210> 678  
 <211> 660  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 678  
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 Val Leu Thr Val Pro Asp Gln Val Gln Met Trp Leu Asp Arg Ala Lys  
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 Glu Val Ile Phe Thr Glu Phe Ser Trp Phe Tyr Val Leu Thr Phe Ser  
 35 40 45  
 Ile Phe Leu Gly Phe Leu Leu Ile Leu Ser Val Ser Ser Leu Gly Asn  
 50 55 60  
 Ile Arg Leu Gly Arg Asp Glu Asp Val Pro Glu Phe Gly Phe Leu Ser  
 65 70 75 80  
 Trp Leu Ala Met Leu Phe Ala Ala Gly Met Gly Val Gly Leu Met Phe  
 85 90 95  
 Phe Gly Val Ala Glu Pro Leu Met His Tyr Phe Ser Asp Ile Thr Ala  
 100 105 110  
 Gly Thr Pro Glu His Arg Gln Gln Gln Ala Leu Leu His Thr Val Phe  
 115 120 125  
 His Trp Gly Val His Ala Trp Ser Val Tyr Gly Thr Ile Ala Leu Ala  
 130 135 140  
 Leu Ala Tyr Phe Gly Phe Arg Tyr Lys Leu Pro Leu Ala Leu Arg Ser  
 145 150 155 160  
 Cys Phe Tyr Pro Leu Leu Lys Glu Lys Ile Ser Gly Arg Phe Gly Asp  
 165 170 175  
 Ala Ile Asp Ile Met Ala Leu Leu Ala Thr Phe Phe Gly Ile Ile Thr  
 180 185 190  
 Thr Leu Gly Phe Gly Ala Ser Gln Leu Gly Ala Gly Leu Gln Glu Ile  
 195 200 205  
 Gly Trp Ile Ala Glu Asn Ser Phe Ser Val Gln Val Leu Ile Ile Ala  
 210 215 220  
 Ala Val Met Ser Leu Ala Val Val Ser Ala Ile Ser Gly Val Gly Lys  
 225 230 235 240  
 Gly Val Lys Val Leu Ser Glu Leu Asn Leu Gly Leu Ala Phe Leu Leu  
 245 250 255

Leu	Phe	Phe	Val	Leu	Ala	Ala	Gly	Pro	Thr	Val	Tyr	Leu	Leu	Ser	Ala	260	265	270	
Phe	Gly	Asp	Asn	Ile	Gly	Asn	Tyr	Leu	Gly	Asn	Leu	Val	Arg	Leu	Ser	275	280	285	
Phe	Lys	Thr	Tyr	Ala	Tyr	Glu	Arg	Glu	His	Lys	Pro	Trp	Phe	Glu	Ser	290	295	300	
Trp	Thr	Val	Leu	Tyr	Trp	Ala	Trp	Trp	Cys	Ser	Trp	Ala	Pro	Phe	Val	305	310	315	320
Gly	Leu	Phe	Ile	Ala	Arg	Ile	Ser	Lys	Gly	Arg	Thr	Ile	Arg	Glu	Phe	325	330	335	
Val	Phe	Gly	Val	Leu	Leu	Ile	Pro	Gly	Leu	Phe	Gly	Val	Leu	Trp	Phe	340	345	350	
Thr	Val	Phe	Gly	Asn	Thr	Ala	Ile	Trp	Leu	Asn	Asp	Gly	Val	Ala	Gly	355	360	365	
Gly	Val	Leu	Glu	Lys	Met	Thr	Ser	Ser	Pro	Glu	Thr	Leu	Leu	Phe	Lys	370	375	380	
Phe	Phe	Asn	Tyr	Leu	Pro	Leu	Pro	Glu	Leu	Thr	Ser	Ile	Val	Ser	Leu	385	390	395	400
Leu	Val	Ile	Ser	Leu	Phe	Phe	Val	Thr	Ser	Ala	Asp	Ser	Gly	Ile	Tyr	405	410	415	
Val	Leu	Asn	Asn	Ile	Thr	Ser	Arg	Asp	Lys	Gly	Leu	Ser	Ala	Pro	Arg	420	425	430	
Trp	Gln	Ala	Val	Met	Trp	Gly	Val	Leu	Met	Ser	Ala	Val	Ala	Val	Leu	435	440	445	
Leu	Met	Arg	Ser	Gly	Gly	Leu	Gly	Asn	Leu	Gln	Ser	Met	Thr	Leu	Ile	450	455	460	
Val	Ser	Leu	Pro	Phe	Ala	Leu	Leu	Met	Leu	Ile	Met	Cys	Phe	Ser	Leu	465	470	475	480
Trp	Lys	Gly	Leu	Ser	Ala	Asp	Lys	Lys	Tyr	Phe	Glu	Thr	Arg	Val	Asn	485	490	495	
Pro	Thr	Ser	Val	Phe	Trp	Thr	Gly	Gly	Lys	Trp	Lys	Glu	Arg	Leu	Val	500	505	510	
Gln	Ile	Met	Ser	Gln	Thr	Gln	Glu	Gln	Asp	Ile	Leu	Lys	Phe	Leu	Lys	515	520	525	
His	Thr	Ala	Ser	Pro	Ala	Met	His	Glu	Leu	Gln	Arg	Glu	Leu	Ser	Glu	530	535	540	
Glu	Tyr	Gly	Leu	Ser	Val	Arg	Val	Asp	Lys	Met	Phe	His	Gln	Asp	Glu	545	550	555	560

Pro Ala Ile Glu Phe Val Ile Arg Lys Glu Thr Met Arg Asp Phe Met  
565 570 575

Tyr Gly Ile Lys Ser Val Gly Gln Asp Val Ser Asp Gln Leu Ile Asn  
580 585 590

Asp Gly Lys Leu Pro His Ile Arg His Gln Thr Thr Tyr Lys Pro Tyr  
595 600 605

Ala Tyr Phe Phe Asp Gly Arg Val Gly Tyr Asp Val Gln Tyr Met Asn  
610 615 620

Lys Asp Glu Leu Ile Ala Asp Ile Leu Lys Asn Tyr Glu Arg Tyr Leu  
625 630 635 640

Met Leu Leu Asp Asp Val Gly Gln Glu Leu Met Ala His Glu Gln Val  
645 650 655

Glu Leu Ala Glu  
660

<210> 679  
<211> 1299  
<212> DNA  
<213> Neisseria gonorrhoeae

<400> 679  
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gtcgaaaaaa tcatttggac ggacaaaagc cggccggccg gcgaaacggc ggaaggcgat 180  
gccttttttg aaaacgtgcg ccgcttcccc gaaaaacccg acttgggccc ccaaccccgg 240  
ataaatgatt tggcacacat catctacacc tccggcacga cggggcatcc caaaggcgcg 300  
ctaatacgtt acgccaacct gttcgccaac ctgaacggca tcgaacgcat ctttaaaatt 360  
tccaaacgcg accgctttat cgttttcctg ccgatgttcc acagcttcac gctgacggct 420  
atggtgctgc tgccgattta tatggcgtgt tcgattatth tgggtcaaate cgtttttccc 480  
ttttccaacg ttttgaaaca ggccctgctc aaacgcgcaa ccgtgttttt gggcgtaccc 540  
gcgatttaca ccgcgatgag caaggcaaaa atcccttggg atttcagatg gttcaaccgc 600  
atccgcctgt ttatcagcgg cggcgcgccct ttggcggaac aaaccatcct cgatttttaa 660  
gccaagtcc cccgcgcca aattgctggaa ggctacggac tgagcgaagc ctgcgccgct 720  
gtcgcggtca atacgcccga acggcaaaaa gcccgcagcg tcggcatccc cctgcccggt 780  
ttggaagcca aagccgtcga tgaagaattg gtcgaagtgc cgcgcggcga agtgggcgaa 840  
ctgatcgtca ggggcggttc ggtgatgcgg ggctacctca atatgcctgc cgccaccgat 900  
gaaaccatcg tcaacggctg gttgaaaacg ggcgatttcg ttaccataga cgaggacggc 960  
tttatcttta tcgtcgaccg caaaaaagat ttgattatth ccaaaggcca aaacgtctat 1020  
ccgcgcgaga tcgaagaaga aatccacaaa ctcgatgccg tcgaagccgc cgccgtcatc 1080  
ggcgtgaaag accgttatgc cgacgaggaa atcgtcgcct tcgtccaatt gaaggaaggt 1140  
atggatttgg gcgaggacga aatccgcgcg cacctgcgta ccgtgctggc aaatttcaa 1200  
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<210> 680  
<211> 432  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 680

Met	Asn	Thr	Phe	Leu	Lys	Asn	Ser	Glu	Tyr	Ala	Tyr	Ile	Leu	Asn	Asp
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Cys	Lys	Ala	Arg	Phe	Leu	Phe	Ala	Ser	Ala	Gly	Leu	Ser	Lys	Glu	Leu
			20					25					30		
Ala	Gly	Leu	Lys	Ala	Gln	Thr	Pro	Val	Glu	Lys	Ile	Ile	Trp	Thr	Asp
		35					40					45			
Lys	Ser	Arg	Pro	Ala	Gly	Glu	Thr	Ala	Glu	Gly	Asp	Ala	Phe	Phe	Glu
	50						55						60		
Asn	Val	Arg	Arg	Phe	Pro	Glu	Lys	Pro	Asp	Leu	Gly	Arg	Gln	Pro	Arg
65					70					75					80
Ile	Asn	Asp	Leu	Ala	His	Ile	Ile	Tyr	Thr	Ser	Gly	Thr	Thr	Gly	His
				85					90					95	
Pro	Lys	Gly	Ala	Leu	Ile	Ser	Tyr	Ala	Asn	Leu	Phe	Ala	Asn	Leu	Asn
			100					105					110		
Gly	Ile	Glu	Arg	Ile	Phe	Lys	Ile	Ser	Lys	Arg	Asp	Arg	Phe	Ile	Val
		115					120					125			
Phe	Leu	Pro	Met	Phe	His	Ser	Phe	Thr	Leu	Thr	Ala	Met	Val	Leu	Leu
	130					135					140				
Pro	Ile	Tyr	Met	Ala	Cys	Ser	Ile	Ile	Leu	Val	Lys	Ser	Val	Phe	Pro
145					150					155					160
Phe	Ser	Asn	Val	Leu	Lys	Gln	Ala	Leu	Leu	Lys	Arg	Ala	Thr	Val	Phe
				165					170					175	
Leu	Gly	Val	Pro	Ala	Ile	Tyr	Thr	Ala	Met	Ser	Lys	Ala	Lys	Ile	Pro
			180					185					190		
Trp	Tyr	Phe	Arg	Trp	Phe	Asn	Arg	Ile	Arg	Leu	Phe	Ile	Ser	Gly	Gly
		195					200					205			
Ala	Pro	Leu	Ala	Glu	Gln	Thr	Ile	Leu	Asp	Phe	Lys	Ala	Lys	Phe	Pro
	210					215					220				
Arg	Ala	Lys	Leu	Leu	Glu	Gly	Tyr	Gly	Leu	Ser	Glu	Ala	Ser	Pro	Val
225					230					235					240
Val	Ala	Val	Asn	Thr	Pro	Glu	Arg	Gln	Lys	Ala	Arg	Ser	Val	Gly	Ile
				245					250					255	
Pro	Leu	Pro	Gly	Leu	Glu	Ala	Lys	Ala	Val	Asp	Glu	Glu	Leu	Val	Glu
			260					265					270		
Val	Pro	Arg	Gly	Glu	Val	Gly	Glu	Leu	Ile	Val	Arg	Gly	Gly	Ser	Val
		275					280						285		

Met Arg Gly Tyr Leu Asn Met Pro Ala Ala Thr Asp Glu Thr Ile Val  
290 295 300

Asn Gly Trp Leu Lys Thr Gly Asp Phe Val Thr Ile Asp Glu Asp Gly  
305 310 315 320

Phe Ile Phe Ile Val Asp Arg Lys Lys Asp Leu Ile Ile Ser Lys Gly  
325 330 335

Gln Asn Val Tyr Pro Arg Glu Ile Glu Glu Glu Ile His Lys Leu Asp  
340 345 350

Ala Val Glu Ala Ala Ala Val Ile Gly Val Lys Asp Arg Tyr Ala Asp  
355 360 365

Glu Glu Ile Val Ala Phe Val Gln Leu Lys Glu Gly Met Asp Leu Gly  
370 375 380

Glu Asp Glu Ile Arg Arg His Leu Arg Thr Val Leu Ala Asn Phe Lys  
385 390 395 400

Ile Pro Lys Gln Ile His Phe Lys Asp Gly Leu Pro Arg Asn Ala Thr  
405 410 415

Gly Lys Val Leu Lys Arg Val Leu Lys Glu Gln Phe Glu Gly Asn Lys  
420 425 430

<210> 681  
<211> 1554  
<212> DNA  
<213> Neisseria meningitidis

<400> 681  
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gccgaagccg tcgcggcgta tctgcaaaat atcggcggtga agttcggcga cacggtcgcg 180  
ctggcggttt ccaattccac agaatttatt accgcctatt tcgccatctc cgccatcggc 240  
gcggtcgccg taccgatgaa cacatttttg aaaaacagcg aatacgcgta tatcctgaac 300  
gactgcaagg cgcgcttcct gttcgcctcg gccggcctgt caaaagaatt ggcgggcttg 360  
aaggcgcaaa cgcccgtcga aaaaatcatt tggacggaca aaagccgtcc gaccggcgaa 420  
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ggccgcgaac cccggataaa tgatttggca cacatcatct acacctccgg cacgacgggg 540  
catcccaaaag gcgcgcta atcagttacgcc aacctgttcg ccaacctgaa cggcatcgaa 600  
cgcatcttta aaatttccaa gcgcgaccgc tttatcgttt tcctgccgat gttccacagc 660  
ttcacgctga cggtatggt gctgctgccg atttatatgg cgtgttcgat tattttggtc 720  
aaatccgttt ttccgttttc caacgttttg aaacagacac tgctcaaacg cgcgaccgtg 780  
tttttgggcg taccgcgat ttacaccgcg atgagcaagg cgaaaatccc ttggtatttc 840  
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atcctcgatt tcaaagccaa gttccccgc gccaaattgc tggaaggcta cggactgagc 960  
gaagcctctc ccgtcgtcgc cgtcaatacg cccgagaggc aaaaagcccg cagcgctcggc 1020  
atccccctgc ccggtttgga agccaaagcc gtcgatgaag aattggtcga agtgccgcgc 1080  
ggcgaagtgg gcgaactgat cgtcaggggc gggtcgggtga tgcggggcta cctcaatatg 1140  
cctgccgcca ccgatgaaac catcgtcaac ggctggttga aaacgggcga tttcgttacc 1200

atagacgaag acggctttat ctttatcgtc gaccgcaaaa aagatttgat tatttcctaaa 1260  
 ggtcaaaaatg tctatccgcg cgagattgaa gaagaaatct acaaactcga tgccgctcgaa 1320  
 gccgccgccg tcatcgcggt gaaagaccgt tatgccgacg aggaaatcgt cgccttcgtc 1380  
 caattgaagg aaggtatgga tttgggcgag aacgaaatcc gccgccacct gcgtaccgtg 1440  
 ctggcaaatt tcaaaatccc caacaaatc cactttaaag acgggctgcc gcgcaacgct 1500  
 acgggcaagg tattgaaacg ggtgttgaag gagcagtttg acggaaacaa atga 1554

<210> 682

<211> 517

<212> PRT

<213> *Neisseria meningitidis*

<400> 682

Met	Asn	Arg	Thr	Tyr	Ala	Asn	Phe	Tyr	Glu	Met	Leu	Ala	Ala	Ala	Cys
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Arg	Lys	Asn	Gly	Asn	Gly	Thr	Ala	Val	Phe	Asp	Gly	Lys	Glu	Lys	Thr
			20					25					30		
Ala	Tyr	Arg	Ala	Leu	Lys	Gln	Glu	Ala	Glu	Ala	Val	Ala	Ala	Tyr	Leu
		35					40					45			
Gln	Asn	Ile	Gly	Val	Lys	Phe	Gly	Asp	Thr	Val	Ala	Leu	Ala	Val	Ser
	50					55					60				
Asn	Ser	Thr	Glu	Phe	Ile	Thr	Ala	Tyr	Phe	Ala	Ile	Ser	Ala	Ile	Gly
65					70					75					80
Ala	Val	Ala	Val	Pro	Met	Asn	Thr	Phe	Leu	Lys	Asn	Ser	Glu	Tyr	Ala
				85					90						95
Tyr	Ile	Leu	Asn	Asp	Cys	Lys	Ala	Arg	Phe	Leu	Phe	Ala	Ser	Ala	Gly
			100					105					110		
Leu	Ser	Lys	Glu	Leu	Ala	Gly	Leu	Lys	Ala	Gln	Thr	Pro	Val	Glu	Lys
		115					120					125			
Ile	Ile	Trp	Thr	Asp	Lys	Ser	Arg	Pro	Thr	Gly	Glu	Thr	Ala	Glu	Gly
		130				135					140				
Asp	Ala	Phe	Phe	Glu	Asp	Val	Arg	Arg	Phe	Pro	Glu	Lys	Pro	Asp	Leu
145					150					155					160
Gly	Arg	Gln	Pro	Arg	Ile	Asn	Asp	Leu	Ala	His	Ile	Ile	Tyr	Thr	Ser
				165					170						175
Gly	Thr	Thr	Gly	His	Pro	Lys	Gly	Ala	Leu	Ile	Ser	Tyr	Ala	Asn	Leu
			180					185						190	
Phe	Ala	Asn	Leu	Asn	Gly	Ile	Glu	Arg	Ile	Phe	Lys	Ile	Ser	Lys	Arg
		195					200					205			
Asp	Arg	Phe	Ile	Val	Phe	Leu	Pro	Met	Phe	His	Ser	Phe	Thr	Leu	Thr
		210				215					220				



Ala Met Val Leu Leu Pro Ile Tyr Met Ala Cys Ser Ile Ile Leu Val  
 225 230 235 240  
 Lys Ser Val Phe Pro Phe Ser Asn Val Leu Lys Gln Thr Leu Leu Lys  
 245 250 255  
 Arg Ala Thr Val Phe Leu Gly Val Pro Ala Ile Tyr Thr Ala Met Ser  
 260 265 270  
 Lys Ala Lys Ile Pro Trp Tyr Phe Arg Trp Phe Asn Arg Ile Arg Leu  
 275 280 285  
 Phe Ile Ser Gly Gly Ala Pro Leu Ala Glu Gln Thr Ile Leu Asp Phe  
 290 295 300  
 Lys Ala Lys Phe Pro Arg Ala Lys Leu Leu Glu Gly Tyr Gly Leu Ser  
 305 310 315 320  
 Glu Ala Ser Pro Val Val Ala Val Asn Thr Pro Glu Arg Gln Lys Ala  
 325 330 335  
 Arg Ser Val Gly Ile Pro Leu Pro Gly Leu Glu Ala Lys Ala Val Asp  
 340 345 350  
 Glu Glu Leu Val Glu Val Pro Arg Gly Glu Val Gly Glu Leu Ile Val  
 355 360 365  
 Arg Gly Gly Ser Val Met Arg Gly Tyr Leu Asn Met Pro Ala Ala Thr  
 370 375 380  
 Asp Glu Thr Ile Val Asn Gly Trp Leu Lys Thr Gly Asp Phe Val Thr  
 385 390 395 400  
 Ile Asp Glu Asp Gly Phe Ile Phe Ile Val Asp Arg Lys Lys Asp Leu  
 405 410 415  
 Ile Ile Ser Lys Gly Gln Asn Val Tyr Pro Arg Glu Ile Glu Glu Glu  
 420 425 430  
 Ile Tyr Lys Leu Asp Ala Val Glu Ala Ala Ala Val Ile Gly Val Lys  
 435 440 445  
 Asp Arg Tyr Ala Asp Glu Glu Ile Val Ala Phe Val Gln Leu Lys Glu  
 450 455 460  
 Gly Met Asp Leu Gly Glu Asn Glu Ile Arg Arg His Leu Arg Thr Val  
 465 470 475 480  
 Leu Ala Asn Phe Lys Ile Pro Lys Gln Ile His Phe Lys Asp Gly Leu  
 485 490 495  
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 500 505 510  
 Phe Asp Gly Asn Lys  
 515

<210> 683  
 <211> 1554  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 683  
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 gccgaagccg ttgcggcgta tctgcaaaat atcggcgtga agttcggcga cacggtcgcg 180  
 ctggcggttt ccaattccac ggaattttatt accgcctatt tcgccgtatc cgccatcggc 240  
 gcggttgccg taccgatgaa cacatttttg aaaaacagcg aatacgcgta tatcctgaac 300  
 gactgcaagg cgcgcttcct gttcgcctcg gccggcctgt caaaagaatt ggcgggcttg 360  
 aaggcgcaaa cgcccgcga aaaaatcatt tggacgggcc aaagccgtcc ggacggcgaa 420  
 atggcggaag gcgatgcctt ttttgaagac gtgcgcgct tccccgaaaa acccgacttg 480  
 ggccgccaac cccggataaa tgatttggca cacatcatct acacctccgg cacgacgggg 540  
 catcccaaag gtgcgcta atcagctacgcc aacctgttcg ccaacctgaa cggcatcgaa 600  
 cgcattctta aaatctccaa gcgcgaccgc tttatcgttt tcctgccgat gttccacagc 660  
 ttacgcgtga cggctatggg gctgctgccg atttatatgg cgtgttcgat tattttgggtc 720  
 aaatccgttt tccccctttc caacgttttg aaacaggcac tgctcaaacg cgcgaccgtg 780  
 tttttgggcg tgcccgcgat ttacaccgcg atgagcaaga cgaaaatccc ttggtatttc 840  
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 gaagcctcgc ccgctcgtcg cgtcaataacg cccgagaggc aaaaagcccg cagcgtcggc 1020  
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 ggcgaaagtgg gcgaactgat cgtcaggggc gggtcgggtga tgcggggcta cctcaatatg 1140  
 cctgccgcca ccgatgaaac catcgtcaac ggctggttga aaacgggcga tttcgttacc 1200  
 atagacgaag acggctttat ctttatcgtc gaccgcaaaa aagatttgat tatttccaaa 1260  
 ggtcaaaatg tctatccgcg cgaaatcgaa gaagaaatct acaactcga tgccgtcgaa 1320  
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 caattgaagg aaggtatgga tttgggcgag aacgaaatcc gccgccacct gcgtaccgtg 1440  
 ctggcaaat tcaaaatccc caaacaatc cactttaaag acgggctgcc gcgcaacgct 1500  
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<210> 684  
 <211> 517  
 <212> PRT  
 <213> Neisseria meningitidis

<400> 684  
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 Ala Tyr Arg Ala Leu Lys Gln Glu Ala Glu Ala Val Ala Ala Tyr Leu  
 35 40 45  
 Gln Asn Ile Gly Val Lys Phe Gly Asp Thr Val Ala Leu Ala Val Ser  
 50 55 60  
 Asn Ser Thr Glu Phe Ile Thr Ala Tyr Phe Ala Val Ser Ala Ile Gly  
 65 70 75 80  
 Ala Val Ala Val Pro Met Asn Thr Phe Leu Lys Asn Ser Glu Tyr Ala

85					90					95					
Tyr	Ile	Leu	Asn	Asp	Cys	Lys	Ala	Arg	Phe	Leu	Phe	Ala	Ser	Ala	Gly
			100					105					110		
Leu	Ser	Lys	Glu	Leu	Ala	Gly	Leu	Lys	Ala	Gln	Thr	Pro	Val	Glu	Lys
		115					120					125			
Ile	Ile	Trp	Thr	Gly	Gln	Ser	Arg	Pro	Asp	Gly	Glu	Met	Ala	Glu	Gly
	130					135					140				
Asp	Ala	Phe	Phe	Glu	Asp	Val	Arg	Arg	Phe	Pro	Glu	Lys	Pro	Asp	Leu
145					150					155					160
Gly	Arg	Gln	Pro	Arg	Ile	Asn	Asp	Leu	Ala	His	Ile	Ile	Tyr	Thr	Ser
				165					170					175	
Gly	Thr	Thr	Gly	His	Pro	Lys	Gly	Ala	Leu	Ile	Ser	Tyr	Ala	Asn	Leu
			180					185					190		
Phe	Ala	Asn	Leu	Asn	Gly	Ile	Glu	Arg	Ile	Phe	Lys	Ile	Ser	Lys	Arg
		195					200					205			
Asp	Arg	Phe	Ile	Val	Phe	Leu	Pro	Met	Phe	His	Ser	Phe	Thr	Leu	Thr
	210					215					220				
Ala	Met	Val	Leu	Leu	Pro	Ile	Tyr	Met	Ala	Cys	Ser	Ile	Ile	Leu	Val
225					230					235					240
Lys	Ser	Val	Phe	Pro	Phe	Ser	Asn	Val	Leu	Lys	Gln	Ala	Leu	Leu	Lys
				245					250					255	
Arg	Ala	Thr	Val	Phe	Leu	Gly	Val	Pro	Ala	Ile	Tyr	Thr	Ala	Met	Ser
			260					265					270		
Lys	Thr	Lys	Ile	Pro	Trp	Tyr	Phe	Arg	Trp	Phe	Asn	Arg	Ile	Arg	Leu
		275					280					285			
Phe	Ile	Ser	Gly	Gly	Ala	Pro	Leu	Ala	Glu	Gln	Thr	Ile	Leu	Asp	Phe
	290					295					300				
Lys	Ala	Lys	Phe	Pro	Arg	Ala	Lys	Leu	Leu	Glu	Gly	Tyr	Gly	Leu	Ser
305					310					315					320
Glu	Ala	Ser	Pro	Val	Val	Ala	Val	Asn	Thr	Pro	Glu	Arg	Gln	Lys	Ala
				325					330					335	
Arg	Ser	Val	Gly	Ile	Pro	Leu	Pro	Gly	Leu	Glu	Val	Lys	Ala	Val	Asp
			340					345					350		
Glu	Glu	Leu	Val	Glu	Val	Pro	Arg	Gly	Glu	Val	Gly	Glu	Leu	Ile	Val
		355					360					365			
Arg	Gly	Gly	Ser	Val	Met	Arg	Gly	Tyr	Leu	Asn	Met	Pro	Ala	Ala	Thr
	370					375					380				
Asp	Glu	Thr	Ile	Val	Asn	Gly	Trp	Leu	Lys	Thr	Gly	Asp	Phe	Val	Thr

385		390		395		400
Ile Asp Glu Asp Gly Phe Ile Phe Ile Val Asp Arg Lys Lys Asp Leu						
	405			410		415
Ile Ile Ser Lys Gly Gln Asn Val Tyr Pro Arg Glu Ile Glu Glu Glu						
	420			425		430
Ile Tyr Lys Leu Asp Ala Val Glu Ala Ala Ala Val Ile Gly Val Lys						
	435			440		445
Asp Arg Tyr Ala Asp Glu Glu Ile Val Ala Phe Val Gln Leu Lys Glu						
	450			455		460
Gly Met Asp Leu Gly Glu Asn Glu Ile Arg Arg His Leu Arg Thr Val						
465		470		475		480
Leu Ala Asn Phe Lys Ile Pro Lys Gln Ile His Phe Lys Asp Gly Leu						
	485			490		495
Pro Arg Asn Ala Thr Gly Lys Val Leu Lys Arg Val Leu Lys Glu Gln						
	500			505		510
Phe Asp Gly Asn Lys						
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<210> 685  
 <211> 1092  
 <212> DNA  
 <213> Neisseria gonorrhoeae

<400> 685  
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 gttttgctca aagaactcga accgtcttgg gaaatcaccc tgattgaacg cttggaagat 120  
 gtggcggttg aatcgtaaaa cgcgtggaac aacgccggca cggggcattc cgcgctgtgc 180  
 gaattgaact atgcgccgct ggggtgcggac ggcgtcatca atccggcgcg cgccctgaat 240  
 attgccgaac agtttcatgt cagccgccag ttttgggcga cgctgggtcg ggaaggcaag 300  
 ttggaagaca attccttcat caatgccgtg ccgcatatgt ctttggtgat gaacgaagac 360  
 cactgccgtt acctgcaaaa acgctatgat gtgttttaaaa cgcagaaaact ttttgaaaat 420  
 atggaatttt ccaccgatcg gaacaaaatt tccgattggg ctccgctgat tatgcgcggc 480  
 cgggacgaaa accaaccctg cgccgccaac tattccgccc aaggcacgga tgtcgatttc 540  
 ggacggctga cgcgccagat ggtgaaatat ttgcagggca agggcgtaaa aaccgagttc 600  
 aaccgccacg tcgaagacat caaacgcgaa tccgacggcg cgtgggtgct caaaaccgcc 660  
 gatacccgca acccagactg gcagctcacc ctccgcaccc gcttcctctt cctcggcgcg 720  
 ggcgcgggcg cactgaccct gctgcaaaaa tccggcatcc ccgaaggcaa aggctacggc 780  
 ggcttaccgg tgtccggcct gttcttccgc aacagcaacc ccgaaaccgc cgaacaacac 840  
 aacgccaaaag tgtacgggca ggcttccgtc ggcgcgccgc cgatgtccgt cccgcacctc 900  
 gacacacgca acgtagacgg caaacgacac cttatgttcg gtccttacgc aggtttccgt 960  
 tccaacttcc tcaagcaagg ctcgtttatg gatttgccgc tgtccatcca tatggacaac 1020  
 ctctatccta tgctgcgcgc cggctggggc aatatgccgc tgaccaataa cctgctgggc 1080  
 gaattgcgtt aa 1092

<210> 686  
 <211> 363  
 <212> PRT

<213> Neisseria gonorrhoeae

<400> 686

Met	Ala	Glu	Ala	Thr	Asp	Val	Val	Leu	Val	Gly	Gly	Gly	Ile	Met	Ser		
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Ala	Thr	Leu	Gly	Val	Leu	Leu	Lys	Glu	Leu	Glu	Pro	Ser	Trp	Glu	Ile		
			20					25					30				
Thr	Leu	Ile	Glu	Arg	Leu	Glu	Asp	Val	Ala	Leu	Glu	Ser	Ser	Asn	Ala		
		35					40					45					
Trp	Asn	Asn	Ala	Gly	Thr	Gly	His	Ser	Ala	Leu	Cys	Glu	Leu	Asn	Tyr		
	50					55					60						
Ala	Pro	Leu	Gly	Ala	Asp	Gly	Val	Ile	Asn	Pro	Ala	Arg	Ala	Leu	Asn		
65					70					75					80		
Ile	Ala	Glu	Gln	Phe	His	Val	Ser	Arg	Gln	Phe	Trp	Ala	Thr	Leu	Val		
				85					90						95		
Ala	Glu	Gly	Lys	Leu	Glu	Asp	Asn	Ser	Phe	Ile	Asn	Ala	Val	Pro	His		
			100					105						110			
Met	Ser	Leu	Val	Met	Asn	Glu	Asp	His	Cys	Arg	Tyr	Leu	Gln	Lys	Arg		
		115					120					125					
Tyr	Asp	Val	Phe	Lys	Thr	Gln	Lys	Leu	Phe	Glu	Asn	Met	Glu	Phe	Ser		
	130					135					140						
Thr	Asp	Arg	Asn	Lys	Ile	Ser	Asp	Trp	Ala	Pro	Leu	Ile	Met	Arg	Gly		
145				150						155					160		
Arg	Asp	Glu	Asn	Gln	Pro	Val	Ala	Ala	Asn	Tyr	Ser	Ala	Glu	Gly	Thr		
				165					170					175			
Asp	Val	Asp	Phe	Gly	Arg	Leu	Thr	Arg	Gln	Met	Val	Lys	Tyr	Leu	Gln		
		180						185					190				
Gly	Lys	Gly	Val	Lys	Thr	Glu	Phe	Asn	Arg	His	Val	Glu	Asp	Ile	Lys		
		195					200					205					
Arg	Glu	Ser	Asp	Gly	Ala	Trp	Val	Leu	Lys	Thr	Ala	Asp	Thr	Arg	Asn		
	210					215					220						
Pro	Asp	Trp	Gln	Leu	Thr	Leu	Arg	Thr	Arg	Phe	Leu	Phe	Leu	Gly	Ala		
225					230					235					240		
Gly	Gly	Gly	Ala	Leu	Thr	Leu	Leu	Gln	Lys	Ser	Gly	Ile	Pro	Glu	Gly		
			245						250					255			
Lys	Gly	Tyr	Gly	Gly	Leu	Pro	Val	Ser	Gly	Leu	Phe	Phe	Arg	Asn	Ser		
		260						265					270				
Asn	Pro	Glu	Thr	Ala	Glu	Gln	His	Asn	Ala	Lys	Val	Tyr	Gly	Gln	Ala		
		275					280					285					

Ser Val Gly Ala Pro Pro Met Ser Val Pro His Leu Asp Thr Arg Asn  
290 295 300

Val Asp Gly Lys Arg His Leu Met Phe Gly Pro Tyr Ala Gly Phe Arg  
305 310 315 320

Ser Asn Phe Leu Lys Gln Gly Ser Phe Met Asp Leu Pro Leu Ser Ile  
325 330 335

His Met Asp Asn Leu Tyr Pro Met Leu Arg Ala Gly Trp Ala Asn Met  
340 345 350

Pro Leu Thr Lys Tyr Leu Leu Gly Glu Leu Arg  
355 360

<210> 687  
<211> 1068  
<212> DNA  
<213> Neisseria meningitidis

<400> 687  
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gtggcggttg aatcgtaaaa cgcgtggaac aacgccggca cggggcattc cgcgctgtgc 180  
gaattgaact atgcgcggtt ggggtgcaaat gggattatcg atccggcgcg cgccctcaat 240  
attgccgaac agtttcatgt cagccgccag ttttgggcga cgctggtcgc ggaaggcaag 300  
ttggaagaca attccttcat caatgccgtg ccgcataatgt ctttgggtgat gaatgaagac 360  
cattgttctt atcttcaaaa acgttatgac gcgttttaaaa ccaaaaaact ttttgaaaat 420  
atggaatttt ccaccgatcg gaacaaaatt tccgattggg ctccgctgat gatgcgcggc 480  
cgggacgaaa accaaccggt cgcgcgcaac tactccgccc aaggtaacga tgtcgatttc 540  
ggacggctga cgcgcgcaat ggtgaaatat ttgcagggca agggcgtaaa aaccgagttc 600  
aaccgccacg tcgaagacat caaacgcgaa tccgacggcg cgtgggtgct caaaaccgcc 660  
gatacccgca accccgacgg gcagctcacc ctccgtaccc gcttcctctt cctcggcgcg 720  
ggcggcgggc cgtcgaccct gctgcaaaaa tccggcatcc ccgaaggcaa aggctacggc 780  
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aacgccaag tgtacgggca ggcttccgtc ggcgcgcgcg cgatgtccgt cccgcacctc 900  
gacacacgca acgtggacgg caaacgccac cttatgttcg gcccttacgc aggcttccgt 960  
tccaacttcc tcaagcaagg ctgcgttatg gatttgccgc tgtccatcca tatggacaac 1020  
ctctatccta tgcgtgtgcgc cggctggggc aatatgccgc tgaccaaa 1068

<210> 688  
<211> 356  
<212> PRT  
<213> Neisseria meningitidis

<400> 688  
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Ala Thr Leu Gly Val Leu Leu Lys Glu Leu Glu Pro Ser Trp Glu Ile  
20 25 30

Thr Leu Ile Glu Arg Leu Glu Asp Val Ala Leu Glu Ser Ser Asn Ala  
35 40 45

Trp	Asn	Asn	Ala	Gly	Thr	Gly	His	Ser	Ala	Leu	Cys	Glu	Leu	Asn	Tyr	50	55	60	
Ala	Pro	Leu	Gly	Ala	Asn	Gly	Ile	Ile	Asp	Pro	Ala	Arg	Ala	Leu	Asn	65	70	75	80
Ile	Ala	Glu	Gln	Phe	His	Val	Ser	Arg	Gln	Phe	Trp	Ala	Thr	Leu	Val	85	90	95	
Ala	Glu	Gly	Lys	Leu	Glu	Asp	Asn	Ser	Phe	Ile	Asn	Ala	Val	Pro	His	100	105	110	
Met	Ser	Leu	Val	Met	Asn	Glu	Asp	His	Cys	Ser	Tyr	Leu	Gln	Lys	Arg	115	120	125	
Tyr	Asp	Ala	Phe	Lys	Thr	Gln	Lys	Leu	Phe	Glu	Asn	Met	Glu	Phe	Ser	130	135	140	
Thr	Asp	Arg	Asn	Lys	Ile	Ser	Asp	Trp	Ala	Pro	Leu	Met	Met	Arg	Gly	145	150	155	160
Arg	Asp	Glu	Asn	Gln	Pro	Val	Ala	Ala	Asn	Tyr	Ser	Ala	Glu	Gly	Thr	165	170	175	
Asp	Val	Asp	Phe	Gly	Arg	Leu	Thr	Arg	Gln	Met	Val	Lys	Tyr	Leu	Gln	180	185	190	
Gly	Lys	Gly	Val	Lys	Thr	Glu	Phe	Asn	Arg	His	Val	Glu	Asp	Ile	Lys	195	200	205	
Arg	Glu	Ser	Asp	Gly	Ala	Trp	Val	Leu	Lys	Thr	Ala	Asp	Thr	Arg	Asn	210	215	220	
Pro	Asp	Gly	Gln	Leu	Thr	Leu	Arg	Thr	Arg	Phe	Leu	Phe	Leu	Gly	Ala	225	230	235	240
Gly	Gly	Gly	Ala	Leu	Thr	Leu	Leu	Gln	Lys	Ser	Gly	Ile	Pro	Glu	Gly	245	250	255	
Lys	Gly	Tyr	Gly	Gly	Phe	Pro	Val	Ser	Gly	Leu	Phe	Phe	Arg	Asn	Ser	260	265	270	
Asn	Pro	Glu	Thr	Ala	Glu	Gln	His	Asn	Ala	Lys	Val	Tyr	Gly	Gln	Ala	275	280	285	
Ser	Val	Gly	Ala	Pro	Pro	Met	Ser	Val	Pro	His	Leu	Asp	Thr	Arg	Asn	290	295	300	
Val	Asp	Gly	Lys	Arg	His	Leu	Met	Phe	Gly	Pro	Tyr	Ala	Gly	Phe	Arg	305	310	315	320
Ser	Asn	Phe	Leu	Lys	Gln	Gly	Ser	Leu	Met	Asp	Leu	Pro	Leu	Ser	Ile	325	330	335	
His	Met	Asp	Asn	Leu	Tyr	Pro	Met	Leu	Cys	Ala	Gly	Trp	Ala	Asn	Met	340	345	350	

Pro Leu Thr Lys  
355

<210> 689  
<211> 1467  
<212> DNA  
<213> *Neisseria meningitidis*

<400> 689  
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gtggcggttg aatcgtaaaa cgcgtggaac aacgccggca cggggcattc cgcgctgtgc 180  
gaattgaact atgcgccgtt ggggtgcaaat gggattatcg atccggcgcg cgccctcaat 240  
attgccgaac agtttcatgt cagccgccag ttttgggcga cgttggtcgc ggaaggcaag 300  
ttggaagaca attccttcat caatgccgtg ccgcataatgt ctttggtgat gaatgaagac 360  
cattgttctt atcttcaaaa acgttatgac gcgtttaaaa cccaaaaact ttttgaaaat 420  
atggaatttt ccaccgatcg gaacaaaatt tccgattggg ctccgctgat gatgcgcggc 480  
cgggacgaaa accaaccggt cgccgccaac tactccgccg aaggcacgga tgtcgatttc 540  
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aaccgccacg tcgaagacat caaacgcgaa tccgacggcg cgtgggtgct caaaaccgcc 660  
gatacccgca accccgacgg gcagctcacc ctccgtaccc gcttcctctt cctcggcgcg 720  
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aacgccaaag tgtacgggca ggcttccgtc ggcgcgccgc cgatgtccgt cccgcacctc 900  
gacacacgca acgtggacgg caaacgccac cttatgttcg gcccttacgc aggttccgt 960  
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gaattgcgta aaaccaaaga agaacgcttc gcctccctgc tggaatacta ccccgaggca 1140  
aaccgccacg actgggaact catcacgcga gggaacgcg ttcaaatacat taaaaagac 1200  
tccgaaaaag gcggcggtgt gcagtttggt acggagattg tcgcacacgc cgacggctcg 1260  
ctcgcgcgat tgctgggcgc gtcgccgggc gcatcgaccg ccgtgccgct gatgatccgg 1320  
ctgatgcacc aatgcttccc cgaacgcacc ccgtcttggg aaggccgtct gaaagagctg 1380  
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tataccgcga aagtgttga tatttaa 1467

<210> 690  
<211> 488  
<212> PRT  
<213> *Neisseria meningitidis*

<400> 690  
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Ala Thr Leu Gly Val Leu Leu Lys Glu Leu Glu Pro Ser Trp Glu Ile  
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Thr Leu Ile Glu Arg Leu Glu Asp Val Ala Leu Glu Ser Ser Asn Ala  
35 40 45  
Trp Asn Asn Ala Gly Thr Gly His Ser Ala Leu Cys Glu Leu Asn Tyr  
50 55 60  
Ala Pro Leu Gly Ala Asn Gly Ile Ile Asp Pro Ala Arg Ala Leu Asn  
65 70 75 80



Ile	Ala	Glu	Gln	Phe	His	Val	Ser	Arg	Gln	Phe	Trp	Ala	Thr	Leu	Val	85	90	95
Ala	Glu	Gly	Lys	Leu	Glu	Asp	Asn	Ser	Phe	Ile	Asn	Ala	Val	Pro	His	100	105	110
Met	Ser	Leu	Val	Met	Asn	Glu	Asp	His	Cys	Ser	Tyr	Leu	Gln	Lys	Arg	115	120	125
Tyr	Asp	Ala	Phe	Lys	Thr	Gln	Lys	Leu	Phe	Glu	Asn	Met	Glu	Phe	Ser	130	135	140
Thr	Asp	Arg	Asn	Lys	Ile	Ser	Asp	Trp	Ala	Pro	Leu	Met	Met	Arg	Gly	145	150	155
Arg	Asp	Glu	Asn	Gln	Pro	Val	Ala	Ala	Asn	Tyr	Ser	Ala	Glu	Gly	Thr	165	170	175
Asp	Val	Asp	Phe	Gly	Arg	Leu	Thr	Arg	Gln	Met	Val	Lys	Tyr	Leu	Gln	180	185	190
Gly	Lys	Gly	Val	Lys	Thr	Glu	Phe	Asn	Arg	His	Val	Glu	Asp	Ile	Lys	195	200	205
Arg	Glu	Ser	Asp	Gly	Ala	Trp	Val	Leu	Lys	Thr	Ala	Asp	Thr	Arg	Asn	210	215	220
Pro	Asp	Gly	Gln	Leu	Thr	Leu	Arg	Thr	Arg	Phe	Leu	Phe	Leu	Gly	Ala	225	230	235
Gly	Gly	Gly	Ala	Leu	Thr	Leu	Leu	Gln	Lys	Ser	Gly	Ile	Pro	Glu	Gly	245	250	255
Lys	Gly	Tyr	Gly	Gly	Phe	Pro	Val	Ser	Gly	Leu	Phe	Phe	Arg	Asn	Ser	260	265	270
Asn	Pro	Glu	Thr	Ala	Glu	Gln	His	Asn	Ala	Lys	Val	Tyr	Gly	Gln	Ala	275	280	285
Ser	Val	Gly	Ala	Pro	Pro	Met	Ser	Val	Pro	His	Leu	Asp	Thr	Arg	Asn	290	295	300
Val	Asp	Gly	Lys	Arg	His	Leu	Met	Phe	Gly	Pro	Tyr	Ala	Gly	Phe	Arg	305	310	315
Ser	Asn	Phe	Leu	Lys	Gln	Gly	Ser	Leu	Met	Asp	Leu	Pro	Leu	Ser	Ile	325	330	335
His	Met	Asp	Asn	Leu	Tyr	Pro	Met	Leu	Arg	Ala	Gly	Trp	Ala	Asn	Met	340	345	350
Pro	Leu	Thr	Lys	Tyr	Leu	Leu	Gly	Glu	Leu	Arg	Lys	Thr	Lys	Glu	Glu	355	360	365
Arg	Phe	Ala	Ser	Leu	Leu	Glu	Tyr	Tyr	Pro	Glu	Ala	Asn	Pro	Asp	Asp			

370                      375                      380  
 Trp Glu Leu Ile Thr Ala Gly Gln Arg Val Gln Ile Ile Lys Lys Asp  
 385                      390                      395                      400  
 Ser Glu Lys Gly Gly Val Leu Gln Phe Gly Thr Glu Ile Val Ala His  
                          405                      410                      415  
 Ala Asp Gly Ser Leu Ala Ala Leu Leu Gly Ala Ser Pro Gly Ala Ser  
                          420                      425                      430  
 Thr Ala Val Pro Leu Met Ile Arg Leu Met His Gln Cys Phe Pro Glu  
                          435                      440                      445  
 Arg Thr Pro Ser Trp Glu Gly Arg Leu Lys Glu Leu Val Pro Gly Tyr  
                          450                      455                      460  
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 465                      470                      475                      480  
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<210> 691  
 <211> 1338  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 691  
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 attgccgaac agtttcatgt cagccgccag ttttggggcga cgctggtcgc ggaaggcaag 300  
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 cactgccggtt acctgcaaaa acgctatgat gtgttttaaaa cgcagaaaact ttttgaaaat 420  
 atggaatttt ccaccgatcg gaacaaaatt tccgattggg ctccgctgat tatgcgcggc 480  
 cgggacgaaa accaaccctg cgccgccaac tattccgccg aaggcacgga tgtcgatttc 540  
 ggacggctga cgcgccagat ggtgaaatat ttgcagggca agggcgtaaa aaccgagttc 600  
 aaccgccacg tcgaagacat caaacgcgaa tccgacggcg cgtgggtgct caaaaccgcc 660  
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 ggcgggcgcg cactgaccct gctgcaaaaa tccggcatcc ccgaaggcaa aggctacggc 780  
 ggcttaccgg tgtccggcct gttcttccgc aacagcaacc ccgaaaccgc cgaacaacac 840  
 aacgccaaag tgtacgggca ggcttccgtc ggcgcgccgc cgatgtccgt cccgcacctc 900  
 gacacacgca acgtagacgg caaacgcacac cttatgttcg gtccttacgc aggtttccgt 960  
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 gaattgcgta aaaccaaaga agaacgcttt gcctccctgc tggaatacta cccgaggcag 1140  
 acccgacgac tgggtactcat cacgcaggnc acgcgtcata tcattanata tgactcgaaa 1200  
 ctgcgcgtgc tgcagttgta cgagattgtg ccacgcgacg ctgcgtcgcg cattctggag 1260  
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<210> 692

<211> 445  
<212> PRT  
<213> Neisseria gonorrhoeae

<400> 692

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		20						25					30		
Thr	Leu	Ile	Glu	Arg	Leu	Glu	Asp	Val	Ala	Leu	Glu	Ser	Ser	Asn	Ala
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Trp	Asn	Asn	Ala	Gly	Thr	Gly	His	Ser	Ala	Leu	Cys	Glu	Leu	Asn	Tyr
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Ala	Pro	Leu	Gly	Ala	Asp	Gly	Val	Ile	Asn	Pro	Ala	Arg	Ala	Leu	Asn
65					70					75					80
Ile	Ala	Glu	Gln	Phe	His	Val	Ser	Arg	Gln	Phe	Trp	Ala	Thr	Leu	Val
			85						90					95	
Ala	Glu	Gly	Lys	Leu	Glu	Asp	Asn	Ser	Phe	Ile	Asn	Ala	Val	Pro	His
			100					105					110		
Met	Ser	Leu	Val	Met	Asn	Glu	Asp	His	Cys	Arg	Tyr	Leu	Gln	Lys	Arg
		115					120					125			
Tyr	Asp	Val	Phe	Lys	Thr	Gln	Lys	Leu	Phe	Glu	Asn	Met	Glu	Phe	Ser
	130					135					140				
Thr	Asp	Arg	Asn	Lys	Ile	Ser	Asp	Trp	Ala	Pro	Leu	Ile	Met	Arg	Gly
145				150						155					160
Arg	Asp	Glu	Asn	Gln	Pro	Val	Ala	Ala	Asn	Tyr	Ser	Ala	Glu	Gly	Thr
			165						170					175	
Asp	Val	Asp	Phe	Gly	Arg	Leu	Thr	Arg	Gln	Met	Val	Lys	Tyr	Leu	Gln
		180						185					190		
Gly	Lys	Gly	Val	Lys	Thr	Glu	Phe	Asn	Arg	His	Val	Glu	Asp	Ile	Lys
		195					200					205			
Arg	Glu	Ser	Asp	Gly	Ala	Trp	Val	Leu	Lys	Thr	Ala	Asp	Thr	Arg	Asn
	210					215					220				
Pro	Asp	Trp	Gln	Leu	Thr	Leu	Arg	Thr	Arg	Phe	Leu	Phe	Leu	Gly	Ala
225					230					235					240
Gly	Gly	Gly	Ala	Leu	Thr	Leu	Leu	Gln	Lys	Ser	Gly	Ile	Pro	Glu	Gly
				245					250					255	
Lys	Gly	Tyr	Gly	Gly	Leu	Pro	Val	Ser	Gly	Leu	Phe	Phe	Arg	Asn	Ser
			260					265					270		

Asn Pro Glu Thr Ala Glu Gln His Asn Ala Lys Val Tyr Gly Gln Ala  
 275 280 285  
 Ser Val Gly Ala Pro Pro Met Ser Val Pro His Leu Asp Thr Arg Asn  
 290 295 300  
 Val Asp Gly Lys Arg His Leu Met Phe Gly Pro Tyr Ala Gly Phe Arg  
 305 310 315 320  
 Ser Asn Phe Leu Lys Gln Gly Ser Phe Met Asp Leu Pro Leu Ser Ile  
 325 330 335  
 His Met Asp Asn Leu Tyr Pro Met Leu Arg Ala Gly Trp Ala Asn Met  
 340 345 350  
 Pro Leu Thr Lys Tyr Leu Leu Gly Glu Leu Arg Lys Thr Lys Glu Glu  
 355 360 365  
 Arg Phe Ala Ser Leu Leu Glu Tyr Tyr Pro Arg Gln Thr Arg Arg Leu  
 370 375 380  
 Val Leu Ile Thr Gln Xaa Thr Arg His Ile Ile Xaa Tyr Asp Ser Lys  
 385 390 395 400  
 Leu Arg Val Leu Gln Leu Tyr Glu Ile Val Pro Arg Asp Ala Arg Ser  
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 420 425 430  
 Asp Asp Thr Ala Pro Ser Ala Pro Val Leu Glu Ser Val  
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<210> 693  
 <211> 1467  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 693  
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 gtggcggttg aatcgtcaaa cgcgtggaac aacgccggca cggggcattc cgcgctgtgc 180  
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 attgccgaac agtttcatgt cagcgcgcag ttttgggcga cgctggtcgc ggaaggcaag 300  
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 cattgttctt atcttcaaaa acgttatgac gcgttttaaaa cccaaaaact ttttgaaaat 420  
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 cgggacgaaa accaaccggt cgcgcgcaac tactccgccc aaggtagcga tgtcgatttc 540  
 ggacggctga cgcgcgcaaat ggtgaaatat ttgcagggca agggcgtaaa aaccgagttc 600  
 aaccgccacg tcgaagacat caaacgcgaa tccgacggcg cgtgggtgct caaaaccgcc 660  
 gatacccgca accccgacgg gcagctcacc ctccgtaccc gcttctctt cctcggcgcg 720  
 ggcgggcgcg cgctgaccct gctgcaaaaa tccggcatcc ccgaaggcaa aggctacggc 780  
 ggcttccccg tgtccggcct gttcttccgc aacagcaacc ccgaaaccgc cgaacaacac 840  
 aacgccaaag tgtacgggca ggcttccgtc ggcgcgccgc cgatgtccgt cccgcacctc 900  
 gacacacgca acgtggacgg caaacgccac cttatgttcg gcccttacgc aggcttccgt 960  
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<210> 694

<211> 488

<212> PRT

<213> Neisseria meningitidis

<400> 694

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      20              25              30

Thr Leu Ile Glu Arg Leu Glu Asp Val Ala Leu Glu Ser Ser Asn Ala
  35              40              45

Trp Asn Asn Ala Gly Thr Gly His Ser Ala Leu Cys Glu Leu Asn Tyr
  50              55              60

Ala Pro Leu Gly Ala Asn Gly Ile Ile Asp Pro Ala Arg Ala Leu Asn
  65              70              75              80

Ile Ala Glu Gln Phe His Val Ser Arg Gln Phe Trp Ala Thr Leu Val
      85              90              95

Ala Glu Gly Lys Leu Glu Asp Asn Ser Phe Ile Asn Ala Val Pro His
  100             105             110

Met Ser Leu Val Met Asn Glu Asp His Cys Ser Tyr Leu Gln Lys Arg
  115             120             125

Tyr Asp Ala Phe Lys Thr Gln Lys Leu Phe Glu Asn Met Glu Phe Ser
  130             135             140

Thr Asp Arg Asn Lys Ile Ser Asp Trp Ala Pro Leu Met Met Arg Gly
  145             150             155             160

Arg Asp Glu Asn Gln Pro Val Ala Ala Asn Tyr Ser Ala Glu Gly Thr
      165             170             175

Asp Val Asp Phe Gly Arg Leu Thr Arg Gln Met Val Lys Tyr Leu Gln
      180             185             190

Gly Lys Gly Val Lys Thr Glu Phe Asn Arg His Val Glu Asp Ile Lys
  195             200             205

Arg Glu Ser Asp Gly Ala Trp Val Leu Lys Thr Ala Asp Thr Arg Asn
  210             215             220

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Pro Asp Gly Gln Leu Thr Leu Arg Thr Arg Phe Leu Phe Leu Gly Ala  
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 Lys Gly Tyr Gly Gly Phe Pro Val Ser Gly Leu Phe Phe Arg Asn Ser  
 260 265 270  
 Asn Pro Glu Thr Ala Glu Gln His Asn Ala Lys Val Tyr Gly Gln Ala  
 275 280 285  
 Ser Val Gly Ala Pro Pro Met Ser Val Pro His Leu Asp Thr Arg Asn  
 290 295 300  
 Val Asp Gly Lys Arg His Leu Met Phe Gly Pro Tyr Ala Gly Phe Arg  
 305 310 315 320  
 Ser Asn Phe Leu Lys Gln Gly Ser Leu Met Asp Leu Pro Leu Ser Ile  
 325 330 335  
 His Met Asp Asn Leu Tyr Pro Met Leu Cys Ala Gly Trp Ala Asn Met  
 340 345 350  
 Pro Leu Thr Lys Tyr Leu Leu Gly Glu Leu Arg Lys Thr Lys Glu Glu  
 355 360 365  
 Arg Phe Ala Ser Leu Leu Glu Tyr Tyr Pro Glu Ala Asn Pro Asp Asp  
 370 375 380  
 Trp Glu Leu Ile Thr Ala Gly Gln Arg Val Gln Ile Ile Lys Lys Asp  
 385 390 395 400  
 Ser Glu Lys Gly Gly Val Leu Gln Phe Gly Thr Glu Ile Val Ala His  
 405 410 415  
 Ala Asp Gly Ser Leu Ala Ala Leu Leu Gly Ala Ser Pro Gly Ala Ser  
 420 425 430  
 Thr Ala Val Pro Leu Met Ile Arg Leu Met His Gln Cys Phe Pro Glu  
 435 440 445  
 Arg Ala Pro Ser Trp Glu Asp Arg Leu Lys Glu Leu Val Pro Gly Tyr  
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 Gly Ile Lys Leu Asn Glu Asn Pro Glu Arg Ala Asp Glu Ile Ile Ala  
 465 470 475 480  
 Tyr Thr Ala Lys Val Leu Asp Ile  
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<210> 695  
 <211> 1467  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 695

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attgccgaac agtttcatgt cagccgccag ttttgggcga cgttggtcgc ggaaggcaag 300
ttggaagaca attccttcat caatgccgtg ccgcatatgt ctttggtgat gaatgaagac 360
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atggaatatt ccaccgatcg gaacaaaatt tccgattggg ctccgctgat gatgcgcggc 480
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aaccgccacg tcgaagacat caaacgcgaa tccgacggcg cgtgggtgct caaaaccgcc 660
gatacccgca accccgacgg gcagctcacc ctccgtaccc gcttcctctt cctcggcgcg 720
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<210> 696

<211> 488

<212> PRT

<213> *Neisseria meningitidis*

<400> 696

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Ala Thr Leu Gly Val Leu Leu Lys Glu Leu Glu Pro Ser Trp Glu Ile
      20                      25                      30

Thr Leu Ile Glu Arg Leu Glu Asp Val Ala Leu Glu Ser Ser Asn Ala
      35                      40                      45

Trp Asn Asn Ala Gly Thr Gly His Ser Ala Leu Cys Glu Leu Asn Tyr
      50                      55                      60

Ala Pro Leu Gly Ala Asn Gly Ile Ile Asp Pro Ala Arg Ala Leu Asn
      65                      70                      75                      80

Ile Ala Glu Gln Phe His Val Ser Arg Gln Phe Trp Ala Thr Leu Val
      85                      90                      95

Ala Glu Gly Lys Leu Glu Asp Asn Ser Phe Ile Asn Ala Val Pro His
      100                      105                      110

Met Ser Leu Val Met Asn Glu Asp His Cys Ser Tyr Leu Gln Lys Arg
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115					120					125					
Tyr	Asp	Ala	Phe	Lys	Thr	Gln	Lys	Leu	Phe	Glu	Asn	Met	Glu	Phe	Ser
130						135					140				
Thr	Asp	Arg	Asn	Lys	Ile	Ser	Asp	Trp	Ala	Pro	Leu	Met	Met	Arg	Gly
145						150					155				160
Arg	Asp	Glu	Asn	Gln	Pro	Val	Ala	Ala	Asn	Tyr	Ser	Ala	Glu	Gly	Thr
				165					170					175	
Asp	Val	Asp	Phe	Gly	Arg	Leu	Thr	Arg	Gln	Met	Val	Lys	Tyr	Leu	Gln
			180					185					190		
Gly	Lys	Gly	Val	Lys	Thr	Glu	Phe	Asn	Arg	His	Val	Glu	Asp	Ile	Lys
		195					200					205			
Arg	Glu	Ser	Asp	Gly	Ala	Trp	Val	Leu	Lys	Thr	Ala	Asp	Thr	Arg	Asn
	210					215					220				
Pro	Asp	Gly	Gln	Leu	Thr	Leu	Arg	Thr	Arg	Phe	Leu	Phe	Leu	Gly	Ala
	225					230					235				240
Gly	Gly	Gly	Ala	Leu	Thr	Leu	Leu	Gln	Lys	Ser	Gly	Ile	Pro	Glu	Gly
				245					250					255	
Lys	Gly	Tyr	Gly	Gly	Phe	Pro	Val	Ser	Gly	Leu	Phe	Phe	Arg	Asn	Ser
			260					265					270		
Asn	Pro	Glu	Thr	Ala	Glu	Gln	His	Asn	Ala	Lys	Val	Tyr	Gly	Gln	Ala
		275					280						285		
Ser	Val	Gly	Ala	Pro	Pro	Met	Ser	Val	Pro	His	Leu	Asp	Thr	Arg	Asn
		290				295					300				
Val	Asp	Gly	Lys	Arg	His	Leu	Met	Phe	Gly	Pro	Tyr	Ala	Gly	Phe	Arg
	305					310					315				320
Ser	Asn	Phe	Leu	Lys	Gln	Gly	Ser	Leu	Met	Asp	Leu	Pro	Leu	Ser	Ile
				325					330					335	
His	Met	Asp	Asn	Leu	Tyr	Pro	Met	Leu	Arg	Ala	Gly	Trp	Ala	Asn	Met
			340					345					350		
Pro	Leu	Thr	Lys	Tyr	Leu	Leu	Gly	Glu	Leu	Arg	Lys	Thr	Lys	Glu	Glu
		355					360					365			
Arg	Phe	Ala	Ser	Leu	Leu	Glu	Tyr	Tyr	Pro	Glu	Ala	Asn	Pro	Asp	Asp
	370					375					380				
Trp	Glu	Leu	Ile	Thr	Ala	Gly	Gln	Arg	Val	Gln	Ile	Ile	Lys	Lys	Asp
	385					390					395				400
Ser	Glu	Lys	Gly	Gly	Val	Leu	Gln	Phe	Gly	Thr	Glu	Ile	Val	Ala	His
				405					410					415	
Ala	Asp	Gly	Ser	Leu	Ala	Ala	Leu	Leu	Gly	Ala	Ser	Pro	Gly	Ala	Ser



420                      425                      430  
 Thr Ala Val Pro Leu Met Ile Arg Leu Met His Gln Cys Phe Pro Glu  
           435                      440                      445  
 Arg Thr Pro Ser Trp Glu Gly Arg Leu Lys Glu Leu Val Pro Gly Tyr  
           450                      455                      460  
 Gly Ile Lys Leu Asn Glu Asn Pro Glu Arg Ala Asp Glu Ile Ile Ala  
 465                      470                      475                      480  
 Tyr Thr Ala Lys Val Leu Asp Ile  
                           485

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 <212> DNA  
 <213> *Neisseria gonorrhoeae*

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<210> 698  
 <211> 250  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

<400> 698  
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           20                      25                      30  
 Gly Leu Gln Gly Gly Met Arg Asn Gln Val Ile Ser Gln Phe Ala Ala  
           35                      40                      45  
 Val Phe Gly Asp Ile Ala His Gln Phe Gly Lys Gln Gly Met Ala His  
           50                      55                      60  
 Ala Val Phe Arg Pro Ala Arg Arg Arg Val Leu Ser Val Gly Phe His  
           65                      70                      75                      80

Thr Phe Ala Asp Asp Gly Phe Gln Val Val Gly Met Leu Ser Gly Gln  
                                     85                                    90                                    95  
 Pro Asp Gly Val Leu Phe Arg Gln Ala Phe Asn Arg Ile Thr Asp Leu  
                                     100                                    105                                    110  
 Phe Phe Ala Val Val Gly Phe Ala Phe Ala Thr Leu Ser Gln Ser Gln  
                                     115                                    120                                    125  
 Thr Gly Asn Arg Arg Ile Val Asp Val Phe Asp Phe Glu Asn Arg Phe  
                                     130                                    135                                    140  
 Arg Arg Ala Leu Cys Arg Ile Leu Arg Leu Phe Arg Arg Ile Phe Gly  
                                     145                                    150                                    155                                    160  
 Phe Ala Ala Gly Gly Lys Gln Gln Ala Ala Ala Gln His Gly Lys Arg  
                                     165                                    170                                    175  
 Tyr Phe Gln His Ser Ala Leu Leu Met Val Ser Lys Cys Arg Leu Lys  
                                     180                                    185                                    190  
 Cys Arg Leu Lys Arg Gly Arg Arg Arg Phe Gly Arg His Trp Val Tyr  
                                     195                                    200                                    205  
 Phe Asn Gly Arg Met Pro Thr Ala Ser Arg Thr Leu Ser Asn Asn Ser  
                                     210                                    215                                    220  
 Arg Ala Ser Leu Arg Ala Phe Cys Ala Pro Ala Cys Lys Ile Ser Ser  
                                     225                                    230                                    235                                    240  
 Ile Cys Glu Gly Leu Glu Val Asn Ala Leu  
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<210> 699  
 <211> 739  
 <212> DNA  
 <213> Neisseria meningitidis

<400> 699  
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 taggtaatcc gtcagtttgc cgccgtcttc ggcgatattg cccaccagtt tggcaaacia 180  
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 ttgttccggc aagcctttta tcggataact gatttgtttt ttgccgtcgt tggttttgcc 360  
 ttcgctgctt tgtcccaa at ccaaaccggc aatcgccgta ttgtcgatat atatgacttt 420  
 gaaaaccggt ttcggcgcgc tttgtaccgc gttttgcggc tgtaccgccg tatttwcgga 480  
 tttgccgcac ggcaargcag caggcagccg cccaatacgg caaaarawgt wttcagcatt 540  
 ccacaytct gatggtttca aaatgccgtc tgaaacgcgg caggcggagg ttcggacggc 600  
 atcgggttca tttcaacggg cggatgccga ccgcatcggg actttgtcca ataattcgcg 660  
 tgcttcttta cgcgctttcg ccgcgcctgc ctgcaaaatc tcttcgattt gcgaagggtc 720  
 ggcggtcagc tcgttgtag 739

<210> 700

<211> 245  
<212> PRT  
<213> Neisseria meningitidis

<400> 700

Met	Ala	Ala	Ala	Glu	Ile	Lys	Arg	Pro	Phe	Ala	Val	Asp	Phe	Gln	His
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Ile	Ala	Ser	Val	Leu	His	Gly	Gly	Ile	Ala	Ala	Phe	Ala	Cys	Leu	Ile
			20					25					30		
Gly	Leu	Gln	Gly	Gly	Met	Arg	Asn	Val	Ile	Arg	Gln	Phe	Ala	Ala	Val
		35					40					45			
Phe	Gly	Asp	Ile	Ala	His	Gln	Phe	Gly	Lys	Gln	Gly	Met	Ala	His	Ala
	50					55					60				
Val	Phe	Cys	Pro	Thr	Cys	Arg	Thr	Val	Leu	Ile	Ile	Gly	Phe	His	Thr
65					70					75					80
Phe	Ala	Ala	Asp	Gly	Phe	Gln	Val	Ala	Gly	Met	Leu	Ala	Asp	Gln	Ser
				85					90					95	
Asp	Asn	Ile	Leu	Phe	Arg	Gln	Ala	Phe	Asn	Arg	Ile	Thr	Asp	Leu	Phe
			100					105					110		
Phe	Ala	Val	Val	Gly	Phe	Ala	Phe	Ala	Ala	Leu	Ser	Gln	Ile	Gln	Thr
		115					120					125			
Gly	Asn	Arg	Arg	Ile	Val	Asp	Ile	Tyr	Asp	Phe	Glu	Asn	Arg	Phe	Arg
	130					135					140				
Arg	Ala	Leu	Tyr	Arg	Val	Leu	Arg	Leu	Tyr	Arg	Arg	Ile	Xaa	Gly	Phe
145					150				155						160
Ala	Ala	Thr	Ala	Xaa	Gln	Gln	Ala	Ala	Ala	Gln	Tyr	Gly	Lys	Xaa	Xaa
				165				170						175	
Xaa	Gln	His	Ser	Thr	Xaa	Leu	Met	Val	Ser	Lys	Cys	Arg	Leu	Lys	Arg
			180					185					190		
Gly	Arg	Arg	Arg	Phe	Gly	Arg	His	Arg	Val	His	Phe	Asn	Gly	Arg	Met
	195						200					205			
Pro	Thr	Ala	Ser	Gly	Thr	Leu	Ser	Asn	Asn	Ser	Arg	Ala	Ser	Leu	Arg
	210					215					220				
Ala	Phe	Ala	Ala	Pro	Ala	Cys	Lys	Ile	Ser	Ser	Ile	Cys	Glu	Gly	Ser
225					230					235					240
Ala	Val	Ser	Ser	Leu											
				245											

<210> 701  
<211> 474

<212> DNA

<213> *Neisseria meningitidis*

<400> 701

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atggcgggcg cggaataaaa acgccccctc gctgtcgatt tccagcacat agcgtccggt 60
ctgcacggcg gcatagccgc ttttgcctgc ctgatagggt tgcagggcgg aatgcgaaat 120
caggtaatcc gtcagtttgc cgccgtcttc ggcgatattg cccaccagtt tggcaaacia 180
ggtatggcac acgcccgtttg ccgcccagcc cgaaggcgcg ccctttccgt cggtttccat 240
acatttgccg acgacggcct ccaagtcggt gggatgcttg ccggtcagcc ggacgacgtt 300
ttgttcggcg aagcctttta gaggttcgga cggcattggg tttatttcaa cggcgcgata 360
ccgaccgcat cagctacttt gcccaataat tcgcgtgctt ctttacgcgc tttttgcgcg 420
cctgcctgca aaatctcttc gatttgcgaa gggtcggcgg tcagctcgtt gtag 474
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<210> 702

<211> 157

<212> PRT

<213> *Neisseria meningitidis*

<400> 702

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Met Ala Ala Ala Glu Ile Lys Arg Pro Leu Ala Val Asp Phe Gln His
  1             5             10             15

Ile Ala Ser Val Leu His Gly Gly Ile Ala Ala Phe Ala Cys Leu Ile
      20             25             30

Gly Leu Gln Gly Gly Met Arg Asn Gln Val Ile Arg Gln Phe Ala Ala
      35             40             45

Val Phe Gly Asp Ile Ala His Gln Phe Gly Lys Gln Gly Met Ala His
      50             55             60

Ala Val Cys Arg Pro Ala Arg Arg Arg Ala Leu Ser Val Gly Phe His
      65             70             75             80

Thr Phe Ala Asp Asp Gly Phe Gln Val Val Gly Met Leu Ala Gly Gln
      85             90             95

Pro Asp Asp Val Leu Phe Arg Gln Ala Phe Lys Arg Phe Gly Arg His
      100            105            110

Trp Val Tyr Phe Asn Gly Arg Ile Pro Thr Ala Ser Arg Thr Leu Pro
      115            120            125

Asn Asn Ser Arg Ala Ser Leu Arg Ala Phe Cys Ala Pro Ala Cys Lys
      130            135            140

Ile Ser Ser Ile Cys Glu Gly Ser Ala Val Ser Ser Leu
      145            150            155
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<210> 703

<211> 546

<212> DNA

<213> *Neisseria gonorrhoeae*

<400> 703

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atgctgaaaa taccttttgc cgtgttgggc ggctgcctgc tgcttgccgc ctgcggaaca 60
tccgaaaata cggcggaaca gccgcaaat gcggcacaaa gcgcgccgaa accggttttc 120
aaagtcaaat acatcgacaa tacggcgatt gccggtttgg ctttgggaca aagtagcgaa 180
ggcaaaacca acgacggcaa aaaacaaatc agttatccga ttaaaggctt gccggaacaa 240
aacgccgtcc ggctgaccgg aaagcatccc aacgacttgg aagccgtcgt cggcaaagt 300
atggaaaccg acggaagga cgcgccttcg ggctgggcgg aaaacggcgt gtgccatacc 360
ttgtttgcca aactggtggg caatatcgcc gaagacggcg gcaaactgac tgattacctg 420
atttcgcatt ccgccctgca accctatcag gcaggcaaaa gcggctatgc cggcgtgcag 480
aacggacgct atgtgctgga aatcgacagc gagggggcgt tttatttccg ccgccgccat 540
tattga 546

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<210> 704

<211> 181

<212> PRT

<213> Neisseria gonorrhoeae

<400> 704

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Met Leu Lys Ile Pro Phe Ala Val Leu Gly Gly Cys Leu Leu Leu Ala
  1             5             10             15

Ala Cys Gly Lys Ser Glu Asn Thr Ala Glu Gln Pro Gln Asn Ala Ala
      20             25             30

Gln Ser Ala Pro Lys Pro Val Phe Lys Val Lys Tyr Ile Asp Asn Thr
      35             40             45

Ala Ile Ala Gly Leu Ala Leu Gly Gln Ser Ser Glu Gly Lys Thr Asn
  50             55             60

Asp Gly Lys Lys Gln Ile Ser Tyr Pro Ile Lys Gly Leu Pro Glu Gln
  65             70             75             80

Asn Ala Val Arg Leu Thr Gly Lys His Pro Asn Asp Leu Glu Ala Val
      85             90             95

Val Gly Lys Cys Met Glu Thr Asp Gly Lys Asp Ala Pro Ser Gly Trp
      100            105            110

Ala Glu Asn Gly Val Cys His Thr Leu Phe Ala Lys Leu Val Gly Asn
      115            120            125

Ile Ala Glu Asp Gly Gly Lys Leu Thr Asp Tyr Leu Ile Ser His Ser
      130            135            140

Ala Leu Gln Pro Tyr Gln Ala Gly Lys Ser Gly Tyr Ala Ala Val Gln
      145            150            155            160

Asn Gly Arg Tyr Val Leu Glu Ile Asp Ser Glu Gly Ala Phe Tyr Phe
      165            170            175

Arg Arg Arg His Tyr
      180

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<210> 705

<211> 545  
<212> DNA  
<213> Neisseria meningitidis

<400> 705  
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ccgwaaatac ggcggtacag ccgcaaaacg cggtagaaag cgcgccgaaa ccggttttca 120  
aagtcataata tatcgacaat acggcgattg cgggttttga tttgggacaa agcagcgaag 180  
gcaaaaccaa cgacggcaaa aaacaaatca gttatccgat taaaggcttg ccggaacaaa 240  
atgttatccg actgatcggc aagcatcccg gcgacttgga agccgtcagc ggcaaagtga 300  
tggaaccga tgataaggac agtccggcag gttgggcaga aaacggcgtg tgccatacct 360  
tgtttgccaa actgggtggc aatatcgccg aagacggcgg caaactgacg gattacctag 420  
tttcgcatgc cgcctgcaa ccctatcagg caggcaaaag cggctatgcc gccgtgcaga 480  
acggacgcta tgtgctggaa atcgacagcg aaggggcgtt ttatttcgcg cgcgccatt 540  
attga 545

<210> 706  
<211> 181  
<212> PRT  
<213> Neisseria meningitidis

<400> 706  
Met Leu Xaa Thr Xaa Phe Ala Val Leu Gly Gly Cys Leu Leu Xaa Cys  
1 5 10 15  
Arg Cys Gly Lys Ser Xaa Asn Thr Ala Val Gln Pro Gln Asn Ala Val  
20 25 30  
Gln Ser Ala Pro Lys Pro Val Phe Lys Val Ile Tyr Ile Asp Asn Thr  
35 40 45  
Ala Ile Ala Gly Leu Asp Leu Gly Gln Ser Ser Glu Gly Lys Thr Asn  
50 55 60  
Asp Gly Lys Lys Gln Ile Ser Tyr Pro Ile Lys Gly Leu Pro Glu Gln  
65 70 75 80  
Asn Val Ile Arg Leu Ile Gly Lys His Pro Gly Asp Leu Glu Ala Val  
85 90 95  
Ser Gly Lys Cys Met Glu Thr Asp Asp Lys Asp Ser Pro Ala Gly Trp  
100 105 110  
Ala Glu Asn Gly Val Cys His Thr Leu Phe Ala Lys Leu Val Gly Asn  
115 120 125  
Ile Ala Glu Asp Gly Gly Lys Leu Thr Asp Tyr Leu Val Ser His Ala  
130 135 140  
Ala Leu Gln Pro Tyr Gln Ala Gly Lys Ser Gly Tyr Ala Ala Val Gln  
145 150 155 160  
Asn Gly Arg Tyr Val Leu Glu Ile Asp Ser Glu Gly Ala Phe Tyr Phe  
165 170 175  
Arg Arg Arg His Tyr

<210> 707  
 <211> 336  
 <212> DNA  
 <213> *Neisseria meningitidis*

<400> 707  
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 aacgacttgg aagccgtcgt cggcaaatgt atggaaaccg acggaaaggg cgcgccttcg 120  
 ggctggggcgg caaacggcgt gtgccatacc ttgtttgcc aactgggtggg caatatcgcc 180  
 gaagacggcg gcaaactgac ggattacctg atttcgcatt ccgccctgca accctatcag 240  
 gcaggcaaaa gcggctatgc cgcctgcag aacggacgct atgtgctgga aatcgacagc 300  
 gagggggcgt tttatttccg ccgccgccat tattga 336

<210> 708  
 <211> 111  
 <212> PRT  
 <213> *Neisseria meningitidis*

<400> 708  
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     1                    5                    10                    15  
 Gly Lys His Pro Asn Asp Leu Glu Ala Val Val Gly Lys Cys Met Glu  
           20                    25                    30  
 Thr Asp Gly Lys Gly Ala Pro Ser Gly Trp Ala Ala Asn Gly Val Cys  
           35                    40                    45  
 His Thr Leu Phe Ala Lys Leu Val Gly Asn Ile Ala Glu Asp Gly Gly  
           50                    55                    60  
 Lys Leu Thr Asp Tyr Leu Ile Ser His Ser Ala Leu Gln Pro Tyr Gln  
           65                    70                    75                    80  
 Ala Gly Lys Ser Gly Tyr Ala Ala Val Gln Asn Gly Arg Tyr Val Leu  
                     85                    90                    95  
 Glu Ile Asp Ser Glu Gly Ala Phe Tyr Phe Arg Arg Arg His Tyr  
           100                    105                    110

<210> 709  
 <211> 524  
 <212> DNA  
 <213> *Neisseria gonorrhoeae*

<400> 709  
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 tccgaaaata cggcggaaca gccgcaaaat gcggcacaaa gcgcgccgaa accgggtttc 120  
 aaagtcaaat acatcgacaa tacggcgatt gccggtttgg ctttgggaca aagtagcgaa 180  
 ggcaaaacca acgacggcaa aaaacaaatc agttatccga ttaaaggctt gccggaacaa 240  
 aacgccgtcc ggctgaccgg aaagcatccc aacgacttgg aagccgtcgt cggcaaatgt 300  
 atggaaaccg acggaaagga cgcgccttcg ggctgggcgg aaaacggcgt gtgccatacc 360

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ttgtttgcc aactggtggg caatatcgcc gaagacggcg gcaaactgac tgattacctg 420
atttcgatt cgcgcctgca accctatcag gcaggcaaaa gcggctatgc cgccgtgcag 480
aacggacgct atgtgctgga aatcgacagc gggggggcgt tttt 524

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<210> 710  
 <211> 174  
 <212> PRT  
 <213> *Neisseria gonorrhoeae*

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<400> 710
Met Leu Lys Ile Pro Phe Ala Val Leu Gly Gly Cys Leu Leu Leu Ala
  1             5             10             15

Ala Cys Gly Lys Ser Glu Asn Thr Ala Glu Gln Pro Gln Asn Ala Ala
          20             25             30

Gln Ser Ala Pro Lys Pro Val Phe Lys Val Lys Tyr Ile Asp Asn Thr
          35             40             45

Ala Ile Ala Gly Leu Ala Leu Gly Gln Ser Ser Glu Gly Lys Thr Asn
          50             55             60

Asp Gly Lys Lys Gln Ile Ser Tyr Pro Ile Lys Gly Leu Pro Glu Gln
          65             70             75             80

Asn Ala Val Arg Leu Thr Gly Lys His Pro Asn Asp Leu Glu Ala Val
          85             90             95

Val Gly Lys Cys Met Glu Thr Asp Gly Lys Asp Ala Pro Ser Gly Trp
          100            105            110

Ala Glu Asn Gly Val Cys His Thr Leu Phe Ala Lys Leu Val Gly Asn
          115            120            125

Ile Ala Glu Asp Gly Gly Lys Leu Thr Asp Tyr Leu Ile Ser His Ser
          130            135            140

Ala Leu Gln Pro Tyr Gln Ala Gly Lys Ser Gly Tyr Ala Ala Val Gln
          145            150            155            160

Asn Gly Arg Tyr Val Leu Glu Ile Asp Ser Glu Gly Ala Phe
          165            170

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<210> 711  
 <211> 546  
 <212> DNA  
 <213> *Neisseria meningitidis*

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<400> 711
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tccgaaaata cggcggaaca gccgcaaaac gcggtacaaa gcgcgccgaa accggttttc 120
aaagtcaa ataatcgacaa tacggcgatt gccggtttgg atttgggaca aagcagcgaa 180
ggcaaaacca acgacggcaa aaaacaaatc agttatccga ttaaaggctt gccggaacaa 240
aatgttatcc gactgatcgg caagcatccc ggcgacttgg aagccgtcag cggcaaatgt 300
atggaaaccg atgataagga cagtccggca ggttgggcag aaaacggcgt gtgccatacc 360

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